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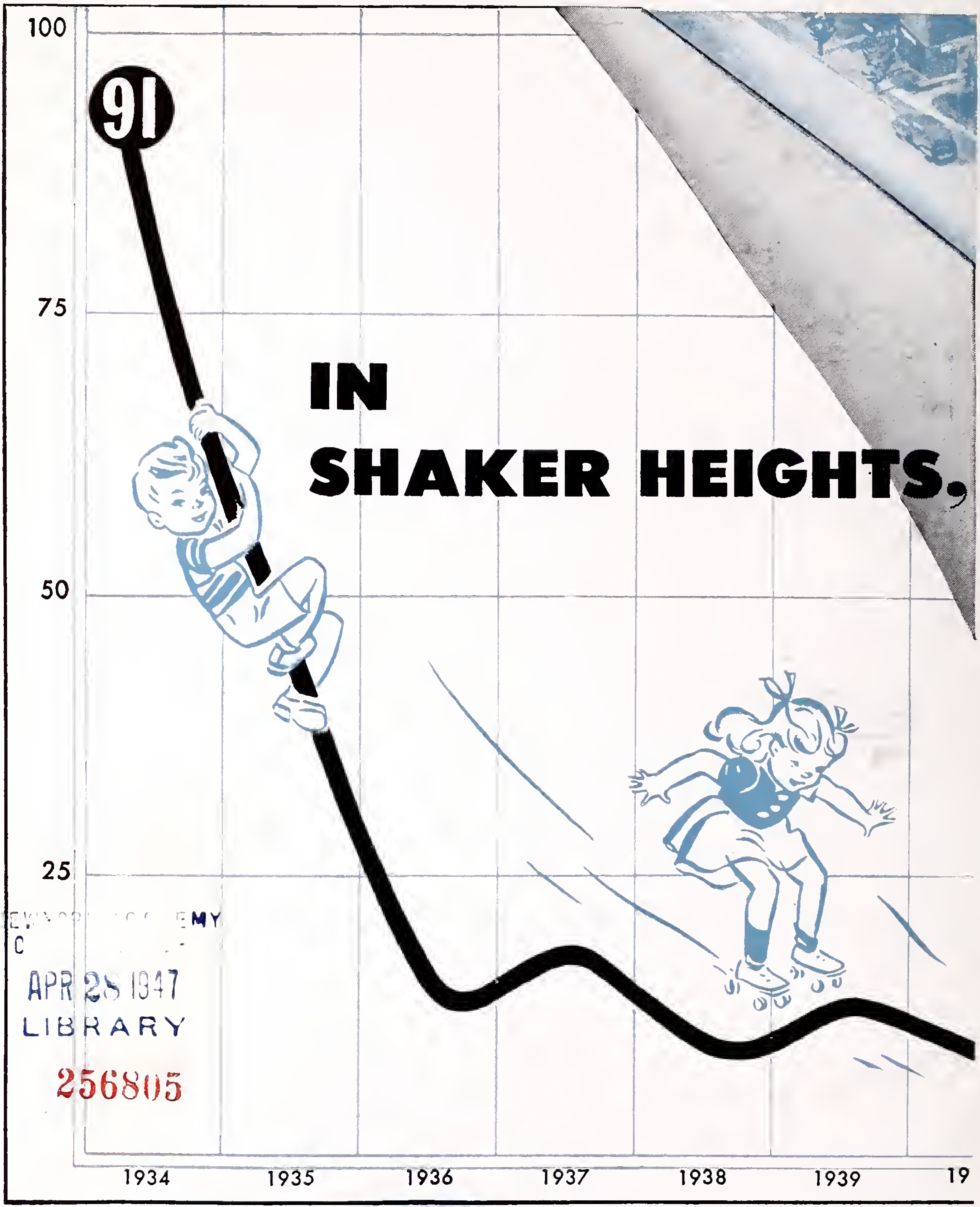

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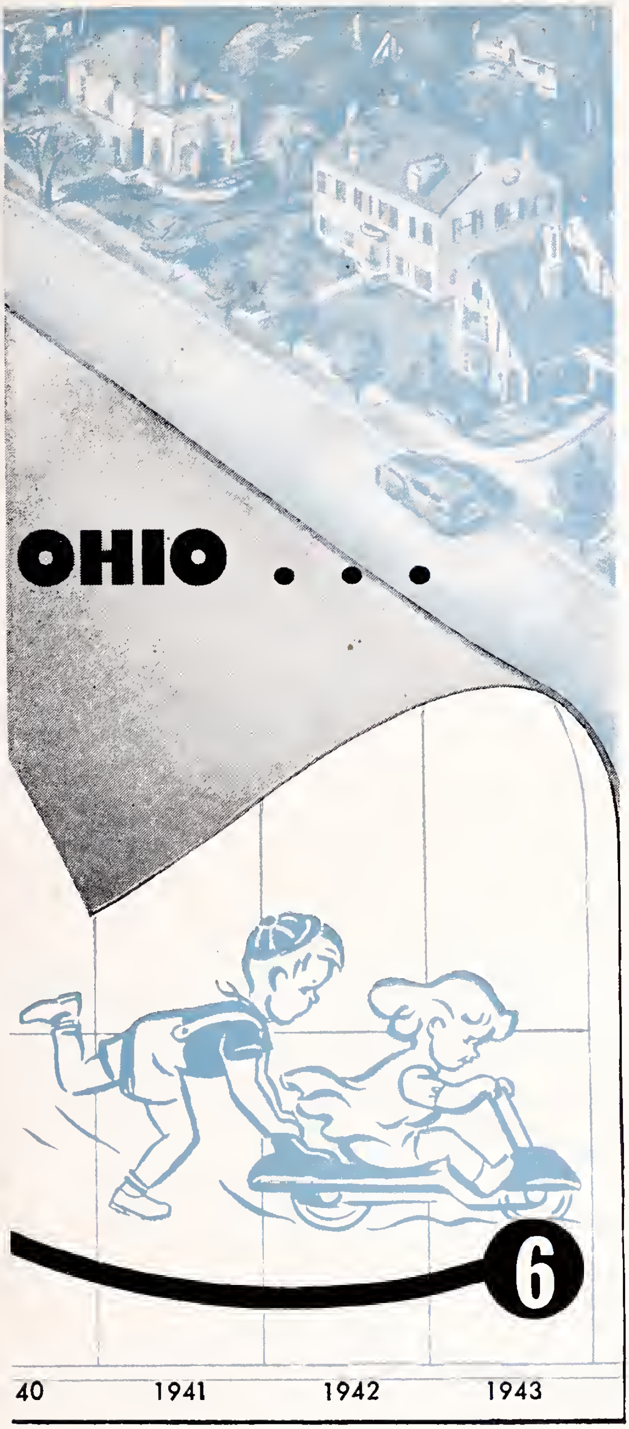

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[1] Garvin, J. A., Ohio State M. J. 41:229, 1945.

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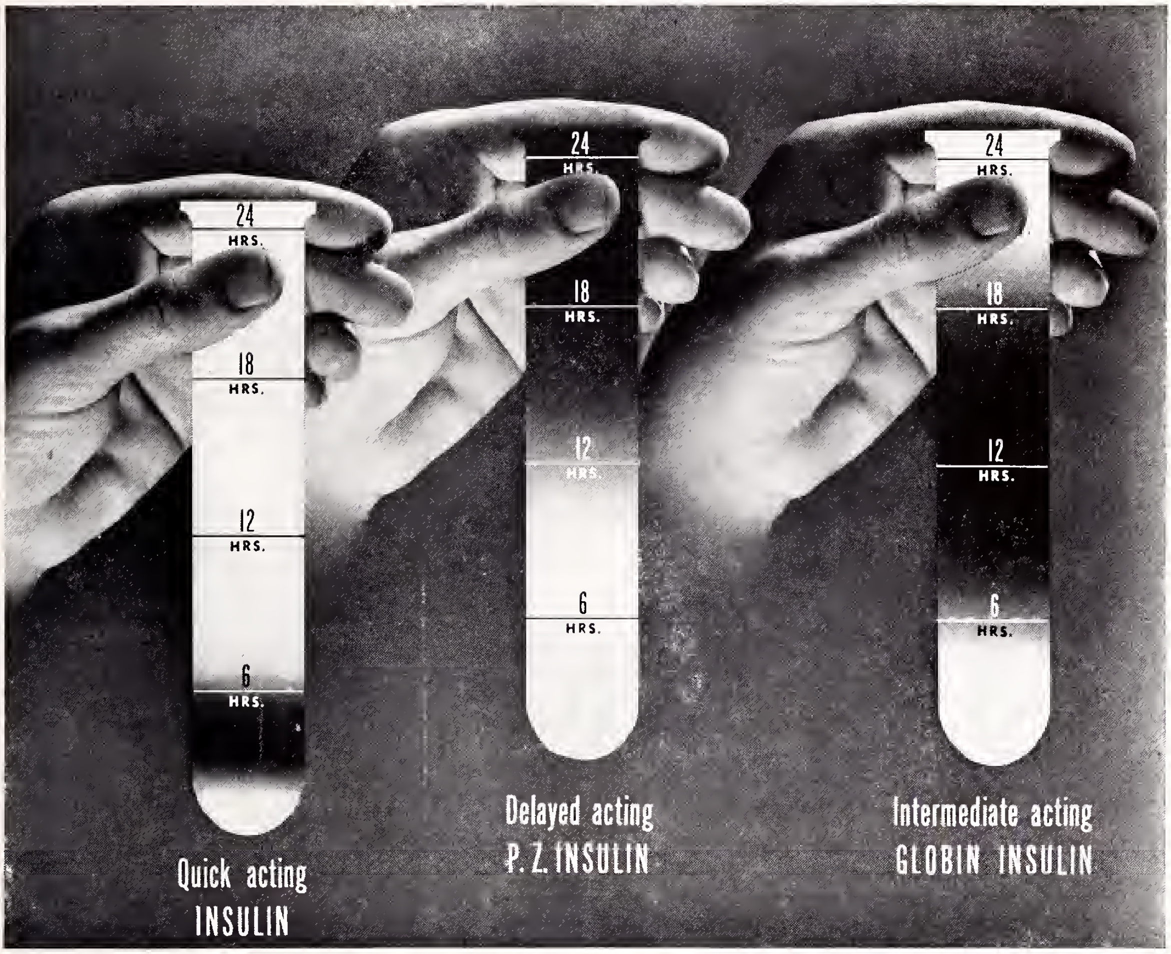
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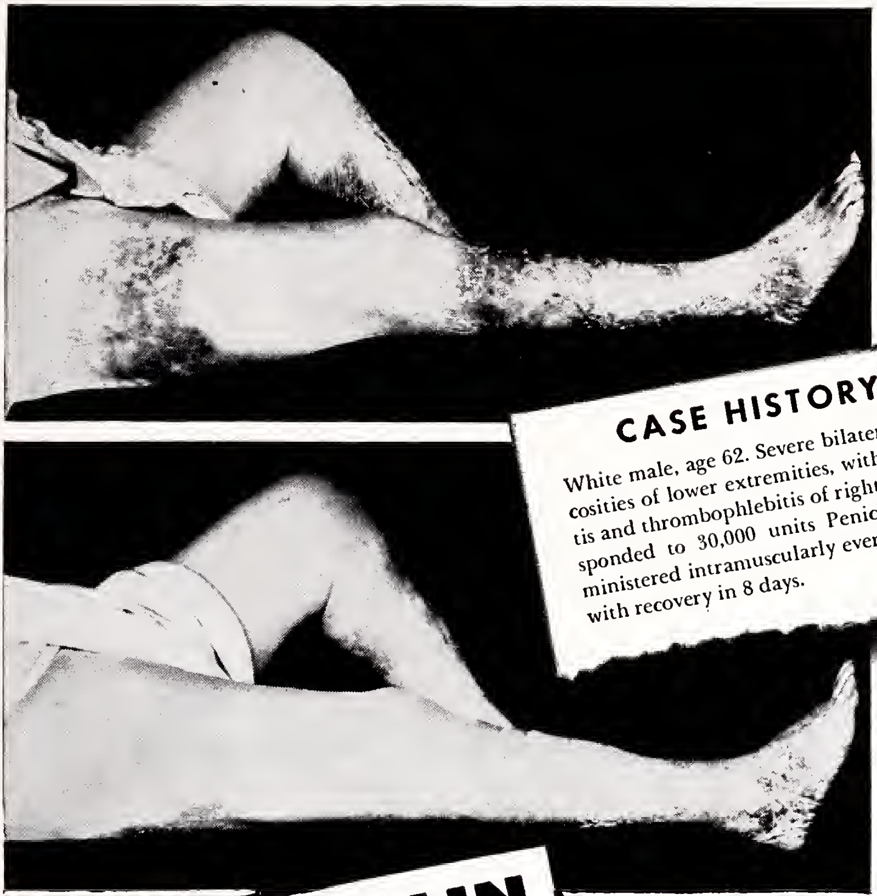

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*Keefer C. S. et al.: New Dosage Forms of Penicillin, J.A.M.A. 128: 1161 (Aug. 18) 1945.

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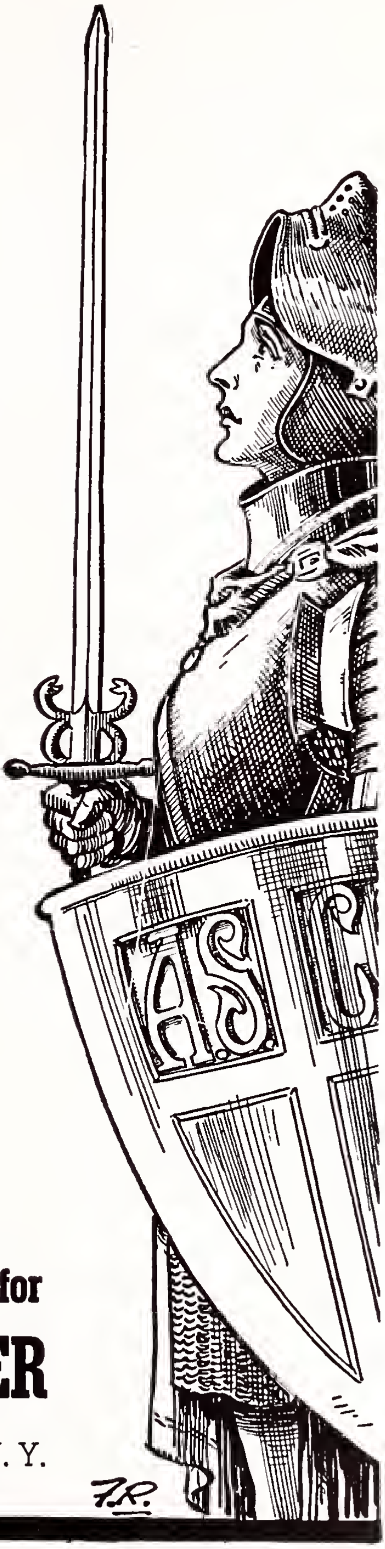
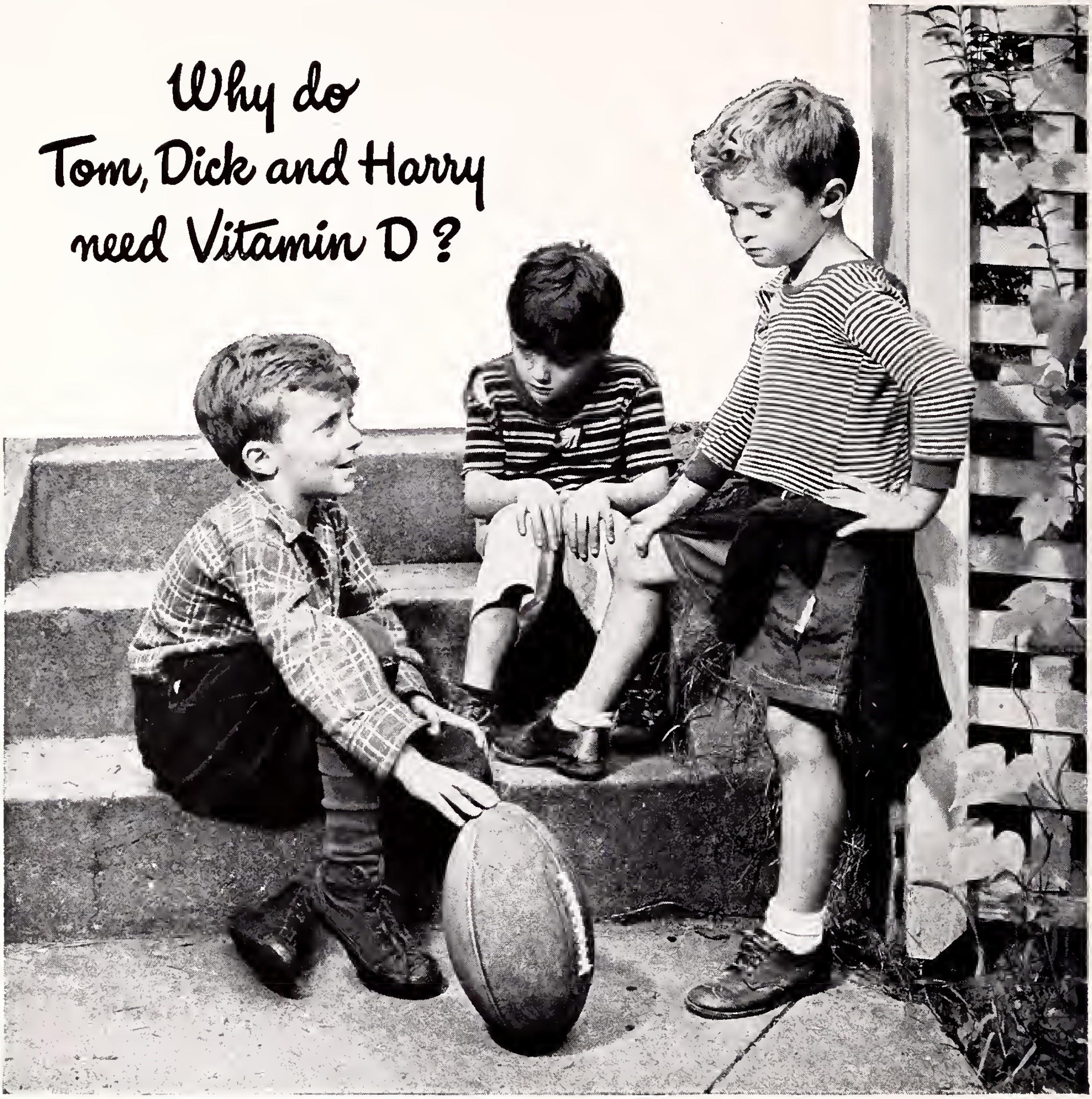


Why do Tom, Dick and Harry need Vitamin D?



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DELAWARE STATE MEDICAL JOURNAL

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TOTAL CYSTECTOMY*

Four Case Reports

Brice S. Vallett, M. D.,
Wilmington, Del.

In recent years there has been an increasing number of papers appearing in the medical literature dealing with total removal of the urinary bladder and bilateral transplantation of the ureters into the sigmoid colon, particularly in cases of carcinoma. Priestley and Strom, of the Mayo Clinic, Graves and Vose, of Boston, Jewett, of Johns Hopkins, McComb, of Toronto, are a few who have written on this subject.

In the past this operation was usually performed in a last desperate effort of the surgeon to save an already hopeless case. Vose voices the modern trend when he says that cystectomy should be seriously thought of in every carcinoma of the urinary bladder. He has in mind the cancer that may seem amenable to electric resection, radium or deep x-ray but which recurs soon after use of these agents. A great measure of success depends on the surgeons' ability, with the help of the pathologist, to classify the particular tumor under observation. Priestley and Strom have set up the following classification:

1. Very extensive low grade neoplasm.
2. Repeatedly recurring low grade neoplasm.
3. Multiple foci of origin of the neoplasm in the bladder.
4. High grade neoplasm.

They also stress proper selection of the patient and feel that this should eliminate the objection of the poor ultimate survival rate. They perform an intraabdominal palpation prior to uretero-sigmoidostomy, and if the liver shows metastases or a lymph node is found involved the operation is abandoned. It would seem that in certain individual cases this indication would not apply, i. e. the patient with a bladder almost filled by solid tumor and consequent very small capacity as in our Case 1. Jewett performs bimanual palpation of all his bladder tumor cases under anesthesia and states that it is the most reliable method in determining operability.

Vesical tuberculosis, sarcoma of the prostate, extensive vesico-vaginal fistula, exstrophy of the bladder, intractable Hunner's ulcer, extensive lympho-granuloma of the male urethra and prostate, vesical papillomatosis are other pathological states that may demand this operation.

Brief Discussion of Techniques

Innumerable techniques have been devised for ureteral transplantation into the bowel. A few of the more popular and more recent ones will be briefly discussed. The Coffey techniques I, II, and III should perhaps be mentioned first, as it was Coffey who demonstrated the soundness of the valve principle in establishing an anastomosis between the urinary and bowel tracts. His technique I has been widely used. It consists in preparing a bed for the severed ureter in the wall of the sigmoid between the muscular and submucous coats, and at the distal end of the bed, carrying the severed end of the ureter into the bowel lumen through a small opening in the mucosa and then anchoring this severed end to the bowel wall. This technique we have used in three of the cases here reported with simultaneous total cystectomy. Mann, of the Mayo Clinic, introduced a slight modification of this technique working mostly extraperitoneally, and Priestley and Strom of that institution have used it with good results.

Vose advocates the use of a T tube above the anastomosis to prevent edema of the new stoma with consequent hydronephrosis and infection. It is left in about 8 days.

---

* From the Department of Urology, Delaware Hospital.

Recently Davalos, of the New York Hospital, has developed a technique whereby both severed ureteral ends are borne into the bowel upon a flap of mucosa which acts like a valve and at the same time prevents ascending infection. His experimental work on dogs has been excellent and it will be interesting to observe this technique when applied to man. One of the most ingenious methods is that of Jewett. This is a two stage operation, the first consisting in liberating each ureter from its normal bed and carrying it over and embedding it (before severance) into a newly prepared bed in the wall of the sigmoid. The normal course of the urine is not disturbed while the ureter is being sealed over in this new bed. In about two weeks the abdomen is again opened and each ureter is severed distal to its new bed. A special electrode is passed into the ureteral lumen and a new stoma is made between ureteral wall and bowel wall. The distal end of the ureter is then treated with phenol and alcohol and triply ligated. This technique will probably enjoy great popularity as it avoids contamination and urinary leakage.

SHORT DISCUSSION OF OPERATIVE TECHNIQUE HEREIN EMPLOYED

In three of the cases herein reported total cystectomy with simultaneous bilateral ureteral transplantation was carried out according to the following plan.

Five days to one week prior to operation sulfasuxadine grs. XLV and sulfathiazole grs. XV is given q.i.d. or every 6 hours. A nourishing diet (non-residue) is prescribed. At least 3 saline enemata are given 24 hours before and the morning of the operation. Avertin and heavy dose of novacaine intraspinally for anesthesia.

The bladder, prostate and seminal vesicles are now removed first as rapidly as is consistent with good hemostasis and careful dissection. Treatment for shock is then begun before beginning the ureteral transplantation regardless of the patient's condition. This second stage is not hurried, as a careful implantation may mean the difference between success and failure. Coffey's technique I is used. We carry the severed end of the ureter into the bowel a little farther than described in the original technique. When both ureters are implanted, the sigmoid above and below the implantation is sutured to the posterior peritoneum to avoid tension on the new suture line and to help hold the ureter straight. Sulfathiazole powder is then sprinkled into the abdomen and into the pelvis. Several Penrose drains are used in the pelvis and a rectal tube is left in the rectum.

CASE 1

J. K., aged 57, was admitted to the hospital October, 1942, complaining of frequent painful urination. Cystoscopy revealed a sessile type of bladder neoplasm. The bladder capacity was reduced to 2 or 3 ounces. Indigo carmine was excreted from each kidney in 5 minutes in good concentration. The blood count was excellent. The blood urea nitrogen was 14.4 mgm%. He was a robust looking male and had never before had any serious illness. An attempt to electro-coagulate the growth with the McCarthy resectoscope showed at once the futility of this approach, and cystotomy with possible resection of the tumor bearing area and implantation of radon seeds was decided upon. Cystostomy on November 25, 1942, revealed a solid tumor involving three-fourths of the bladder wall. It could be seen that total cystectomy was the only procedure that would offer any chance for cure. However, as this possibility had not been previously discussed with the patient, he was returned to his bed and total cystectomy with bilateral ureteral transplantation was carried out two weeks later, using Coffey technique I (operating time, 3 hours, 25 minutes).

Microscopic: The microscopical examination shows the bladder wall involved in a malignant growth which started from the surface epithelium and infiltrated the wall. In the deeper portions there was a transformation from the broad sheets of highly anaplastic squamous epithelial cells to bundles of interlacing strands of long spindle cells. Prostate apparently not involved in the malignant process.

Diagnosis: Carcinoma of urinary bladder-mixed type. Figs. 1 and 2.

January 18, 1943—Intravenous urograms show bilateral hydronephrosis.

January, 1946—Patient living and well.

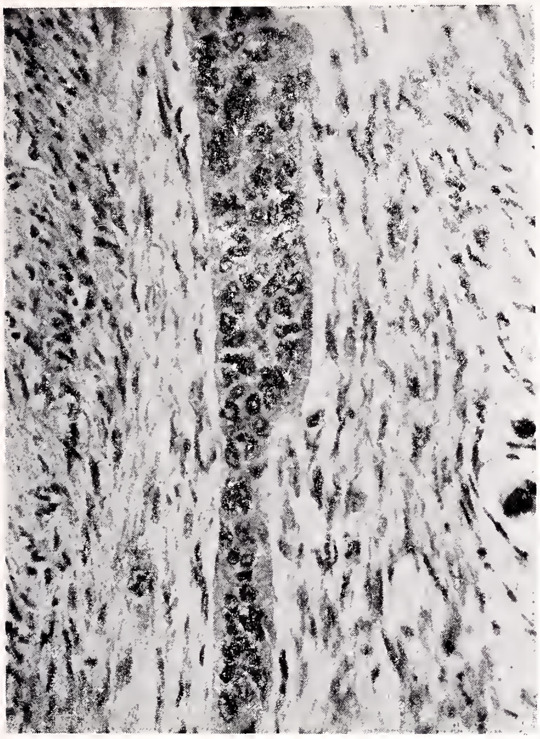

Fig. 1
Deep in Woll x400

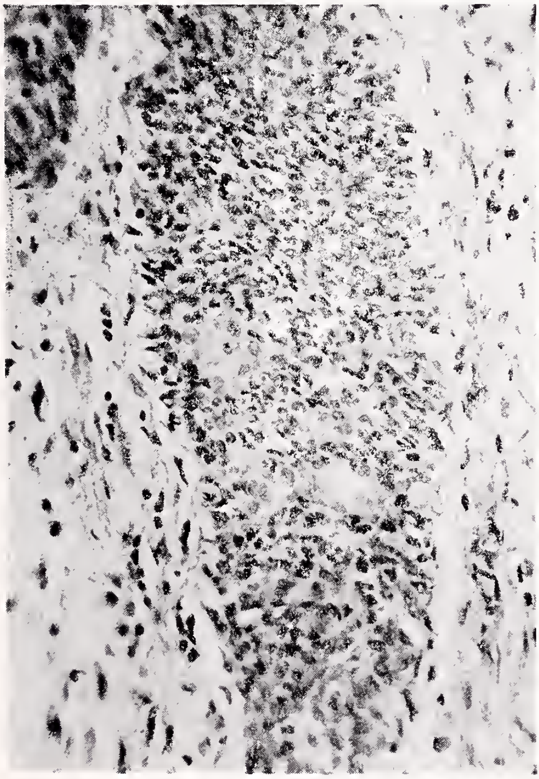

Fig. 2
Submucosal Tumor x400

Case 2

G. K., aged 69. A well preserved man was admitted to the hospital, the chief complaint being increased frequency of urination, particularly at night. There was considerable distress at each voiding and the patient felt that something must be done for relief. He had had a cystostomy two years before in another institution, the diagnosis undetermined, and had had electrocoagulation of the bladder through the cystoscope for a so-called ''seed wart'' of the bladder. When seen by us his blood count was very good. The blood urea nitrogen showed a high normal 18.9 mgm. April 3, 1945, lung fields clear by x-ray. Cystoscopy revealed an angry red mucosa and a flat ulcerative infiltrative type of neoplasm. Despite this man's age we felt that he would tolerate total cystectomy and this together with simultaneous bilateral uretero-sigmoidostomy was carried out, the prostate and seminal vesicles also being removed.

Pathologist's report: Opened bladder shows on the right postero-lateral wall a 2.5 cm oval area of mucosa which is elevated, congested and slightly indurated. Prostate and seminal vesicles apparently normal.

Microscopic: Section of bladder reveals undifferentiated tumor consisting of loose cells and occasional nests and irregular pseudo gland-like structures made up of irregular hyperchromatic tumor cells resting in a fibrous stroma showing suggestive keratinization. Small foci of tumor cells are found in the peripheral wall and in the loose connective tissue. Sections of prostate and seminal vesicles reveal no evidence of carcinoma.

Diagnosis: Carcinoma of bladder with extension through the wall. This man made a surprising convalescence and was discharged from the hospital on his 20th postoperative day. Unfortunately his postoperative care at home was inadequate and a little over one month later he was readmitted in a semi-coma with a virulent bilateral pyelonephritis from which he died.

Autopsy revealed a 18 cm. healed right midline abdominal surgical scar. The genitalia were markedly swollen and there was pitting edema of the extremities. The skin appeared anemic. The peritoneal cavity contained approximately 100 cc. of serous yellow fluid and the pleural cavities each contained 100 cc. of serous yellow fluid. The heart showed slight left hypertrophy. The lungs showed very slight dependent congestion and edema. The liver was swollen and fatty. The right kidney weighed 275 gms.; the left 200 gms. The capsules stripped easily and were greatly thickened, inflamed and infiltrated with exudate. The kidney surfaces were discolored and studded with miliary areas of yellow grey red exudate. Cut section revealed similar areas of miliary necrosis and suppuration extending throughout both kidneys. The calices were slightly dilated. The right ureter measured 2 cm. in diameter and the left 1 cm. Both were filled with cloudy purulent urine. The ureters were tightly anastomosed to the large bowel. The right joined to the recto-sigmoid just at the pelvic brim, and the left at a point approximately 15 cm. above the right. A probe passed freely from the ureters into the lumen of the intestines (Fig. 3). The intestinal stoma were swollen and congested. Below the point of anastomeses the intestines were filled with green watery foul smelling exudate. The bladder was absent and the operative site was dry and showed no evidence of residual tumor or inflammation. Several lymph nodes along the aorta were slightly enlarged and hyperplastic. Microscopic examination revealed extensive pyelonephritis of both kidneys.

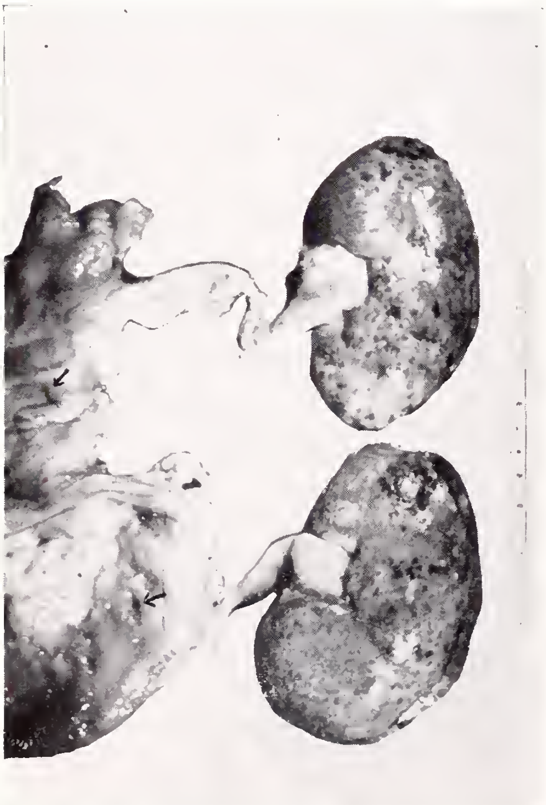

Fig. 3
Ureteral Ostia—Dark Dimples by Arrows

CASE 3

A. C., middle-aged white woman, had made the rounds seeking relief from her bladder distress. The diagnosis was that of Hunner ulcer of the urinary bladder. At my hands she had had repeated fulgurations, hydrostatic pressure stretchings of the bladder, and the silver nitrate treatment that very often gives relief in the milder cases; however, her periods of relief were short and after two years I suggested resection of the bladder wall. I.-V. urograms showed normal kidneys. A urinary culture revealed coagulase positive hemolytic and non hemolytic staphlococcus aurens (showing weak urea splitting power) and beta hemolytic streptococcus. Stained urinary sediment showed gram positive cocci. Partial resection of the bladder wall caused an intense lighting up of the pathological process, with consequent incrustation of the mucosa and a heavy fetid urine. Her condition became desperate and irrigation and instillations gave no improvement. It was felt that ureteral transplantation with total cystectomy was the only hope and this was performed May 12, 1943, using Coffey's technique I. Sulfathiazole 10 grams, dusted in abdoment and pelvis. Abdomen closed without drainage. Pelvic cavity drained with one large gauze sponge.

The *microscopic* section (Figs. 4 and 5) of the bladder tissue removed at the primary resection "shows epithelium denuded or replaced over the greater portion of the sections examined." In one area where it is present it consists of a dozen rows of large vacuolated cells with small pyknotic nuclei. Basal cell layers somewhat resemble that of stratified squamous epithelium. The denuded areas present a surface of fibrous granulation tissue which is highly vascular and heavily infiltrated with plasma cells and lymphocytes. Beneath the surface and overlying the mucularis is a rather wide layer of edematous con-

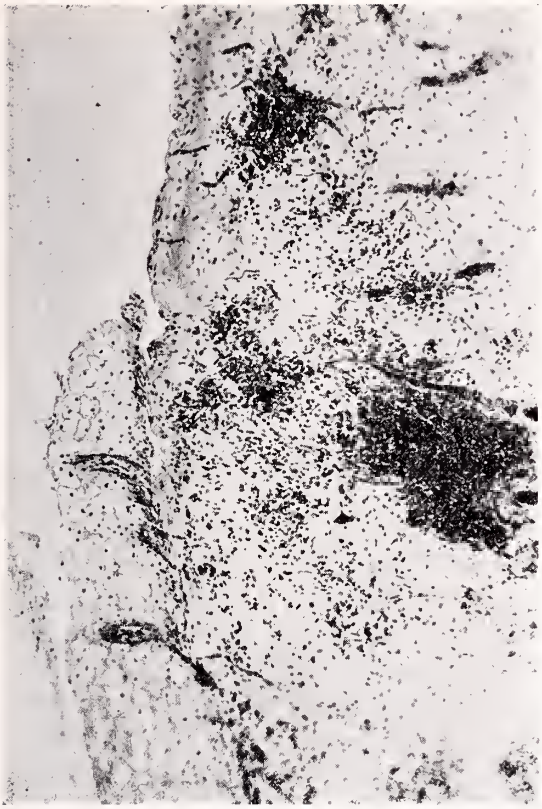

Fig. 4
Hunner Ulcer

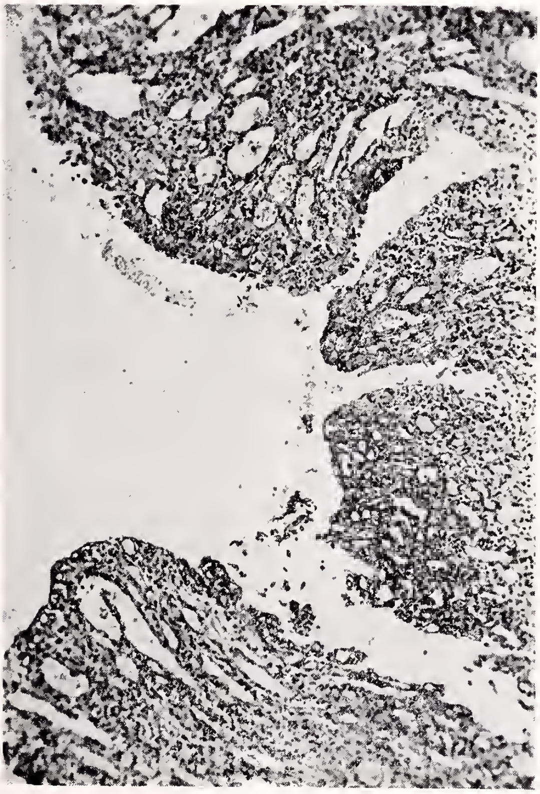

Fig. 5
'unner Ulcer

nective tissue variously infiltrated with eosinophiles, lymphocytes and plasma cells. It also contains areas of interstitial hemorrhage and nests of lymphocytes.

Patient is living and well, January, 1946.

Case 4

R. F., aged 57, was admitted to the hospital with history of recent hematuria and dysuria. He was a robust individual, somewhat nervous.

Cystoscopy revealed a papillary like growth confined to the region of the prostatic urethra and vesical neck. This area was electrically resected and electrocoagulated. The pathologist reported that "the microscopic section shows an infiltrating growth of masses of fairly well differentiated epithelial cells of the bladder mucosal type.

Diagnosis: Carcinoma of the urinary bladder, grade II.

In twelve days he was discharged from the hospital, but four months later was readmitted to the hospital for a second electric resection and electrocoagulation. The pathologist again reported grade II carcinoma. One week later, patient was discharged from the hospital. He did not improve and was admitted for the third time three months later. It was felt that by this time there was involvement of the trigone and prostate. Consequently, the first stage of Jewett's technique was performed September 29, 1944. The ureters were found to be of small calibre and some difficulty was experienced in embedding the left ureter as the longitudinal band of the sigmoid was attenuated. Twenty-four hours later signs of ureteral obstruction were present on the left side and it became necessary to catheterize this ureter and leave the ureteral catheter in situ for several days. This maneuver was successful in preventing a recurrence of the ureteral obstruction.

Twenty-six days after the first stage the abdomen was again opened and the right ureter found where it emerged from the sigmoid. It was severed below this point, the special electrode passed into the ureteral lumen, and a new stoma between ureter and sigmoid crated. This stoma was tested for patency and a purse string suture applied to the proximal end of the ureter, burying the latter in the bowel wall. On the left side, however, we ran into trouble: the electrode was too large for the ureteral lumen and when it was fully introduced too much current was applied. A portion of the ureter pulled away distal to the stoma and as the sigmoid was fixed at this point, a purse string to close the ureter was placed with difficulty. Ultimately, an abdominal fistula developed. In about two months this had seemingly closed and it appeared safe to go ahead with the cystectomy. The bladder, prostate and seminal vesicles were removed through the perineum with little difficulty, using Young's prostatic tractor. The perineal route was used to obviate any disruption of healing in the region of the fistula and to provide dependent drainage in case such disruption occurred. There was no shock following this operation, but the patient died from sepsis five days later.

Autopsy revealed a 14 cm. partially closed lower midline abdominal surgical incision with a draining 1 cm. sinus at the lower pole. Over the perineum there was a recent V-shaped surgical incision. The lower abdomen contained numerous fine fibrous adhesions. There was no evident leakage of fluid into the peritoneal cavity. The heart muscle showed slight degeneration and the aortic and mitral valves were slightly fibrous. Both lungs showed moderate basal congestion. The liver was slightly congested and showed marked fatty change. The spleen was toxic. Both right and left kidneys were enlarged and their perirenal tissue was thickened and adherent. All of the calices were dilated and the right kidney was filled with mushy yellow granular material which was chemically identified as sulfonamide crystals. Both kidneys were discolored and inflamed. The ureters were dilated on both sides. The right ureter anastomosed freely with a loop of the lower sigmoid. Where the left ureter joined the sigmoid there was a necrotic open friable sinus which connected with a massive abscess that extended behind the bladder and the right retroperitoneal space up to the level of the right diaphragm. The bladder was absent and there was no evidence of residual tumor. Microscopic examination revealed extensive pyelonephritis.

Discussion of Cases

Case 1 would perhaps have been declared inoperable by some operators, as Priestley and Strom remark that no two urologists agree on indications. Had there been any other alternative we perhaps would not have elected to do total cystectomy. The fact that the patient is alive and working three years later should encourage the use of this operation if there is the slightest hope for cure.

Case 2 parallels Case 1 in that the neoplasm had broken through the bladder wall; however, at autopsy no evidence of carcinoma could be demonstrated. However, the importance of postoperative care is gravely realized here and we unquestionably erred in permitting this man's early discharge from the hospital. Had streptomycin been available or had the sulfa drugs been given consistently at home, he, having a successful ureter-colonic anastomosis, might have been saved.

Case 3 again is a patient where cystectomy became mandatory, as in Case 1. It is also an interesting fact that both Case 1 and Case 3 are living and well. Hunner's ulcer of the urinary bladder can give as much local distress as carcinoma, and while it is the exceptional case that demands cystectomy, such cases do occur.

Case 4 came to his death through a technical error at operation. Jewett has drawn attention to these hazards and has made changes in his original technique to combat them. First of all, he mentions prophylaxis of adhesions in the first stage by proper fixation of the sigmoid containing the ureter. Secondly, "calibration of the intramural ureter" (for which he has a set of sounds) and avoidance of a tangential cut with the electrode, and the use of too much current, and care in handling the proximal end of the ureter to avoid urinary leak, where formerly he used a purse string suture he now uses phenol, alcohol and triple ligation.

Our error had to do with too much current and pulling away of the proximal end of the ureter. Had we realized the extent of the damage caused by the faulty implantation of the left ureter, we could have followed Wilhelm and Freed's example. They report two cases in the September, 1945, issue of the

Journal of Urology in which a secondary operation was successful in re-establishing the continuity of the ureter into the bowel after a primary ureter-sigmoid implantation had failed.

The fact that Cases 1, 2 and 3 all had successful ureterosigmoidal anastomoses done by the Coffey I technique casts no reflection on the technique developed by Jewett. His technique is an exacting one and he says that "in my last ten cases only one death occurred, this being due to hemorrhage from an unrecognized pulmonary metastasis." It is undoubtedly true that with the modern techniques and newer drugs cystectomy will in the future be more often done, contributing somewhat to a brighter outlook in the control ot bladder cancer.

CLINICAL CASES FROM THE HOSPITALS

CHRONIC NEPHRITIS WITH METASTATIC CALCIFICATION*

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Case Report. Patient, J. W., a 22-year-old white male weighing 190 pounds, gives a history of having acute glandular fever in October, 1940. The heterophil test was negative and the illness was of a few days duration. In December, 1940, a routine checkup revealed 2 plus urine albumin; specific gravity 1.009; hemoglobin 13 gms; RBC 4.8; blood pressure 136/80. A repeat checkup in June, 1941, showed 3 plus albumin; specific gravity 1.015; blood pressure 124/84. In February, 1942, urine-albumin was 3 plus, with a very occasional hyaline cast and red blood cell; hemoglobin 11.5 gms. During March, 1942, there was an upper respiratory infection which was treated for two days with sulfadiazine. When he reported back to work in April, 1942, the hemoglobin was 10 gms., and the red blood count showed a drop to 3.87. In July, 1942, he received inoculations for typhoid and smallpox. He went into military service and during this period suffered an attack of acute respiratory disease, was hospitalized and treated with sulfonamides and was said to have had an attack of anuria (government records unobtainable) and a diagnosis of nephritis was made during this period. Following medical discharge he was seen by his family physician, who found an elevated blood pressure and an increased blood urea nitrogen.

He was hospitalized in April, 1945, following attacks of sore throat, nose bleeds, low grade fever and swollen cervical glands of 2 weeks duration. During this time laboratory examinations revealed RBC 3.3; hemoglobin 10 gms.; WBC 7500; urine 2 plus albumin; BUN 140; creatinine 11. Admission blood pressure 160/90; temperature 99°. Physical examination was negative except for large nodes in neck. Patient was treated and studied until May 7, 1945, during which period of time he received 4,200,000 units of penicillin, with the hope that there might be some improvement. Laboratory studies revealed: sedimentation rate 17; urine persistent 2 plus albumin; occasional RBC.; blood count averaged 8 gms; RBC 3.0; BUN 135; creatinine 16.4; blood pressure rose as high as 190/70. During this admission he received 500 cc. of blood. Patient was readmitted on June 7, 1945, because of edema of the ex-

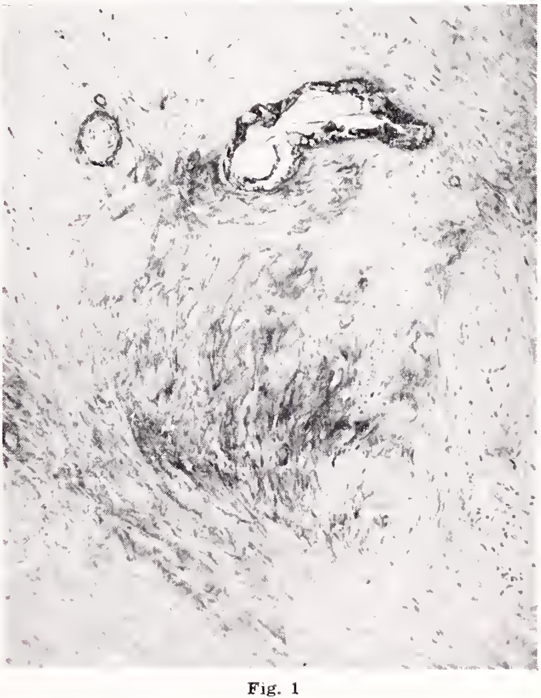

Fig. 1
Photomicrograph X100. Calcification in Heart Muscle

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* From the Clinical Pathological Conference, Delaware Hospital.

tremities. While ambulatory he had received one other transfusion. Blood pressure was again elevated. Patient was definitely anemic, with hemoglobin 6.9 gms., and at this time the cell differential showed 10% eosinophiles. Urine continued to show albumin. Admission BUN 223 rose to 265; creatinine 17 to 23; admission plasma chlorides 552; total serum protein 6; phosphorus on July 2, 1945, 11.4; PSP 0%. Flat plate of the chest showed marked enlargement of the heart to the left, some evidence of congestion; flat plate of the abdomen showed no evidence of calculi. Bones showed no evidence of demineralization. The patient failed to improve, and died August 19, 1945, at 2:00 a. m.

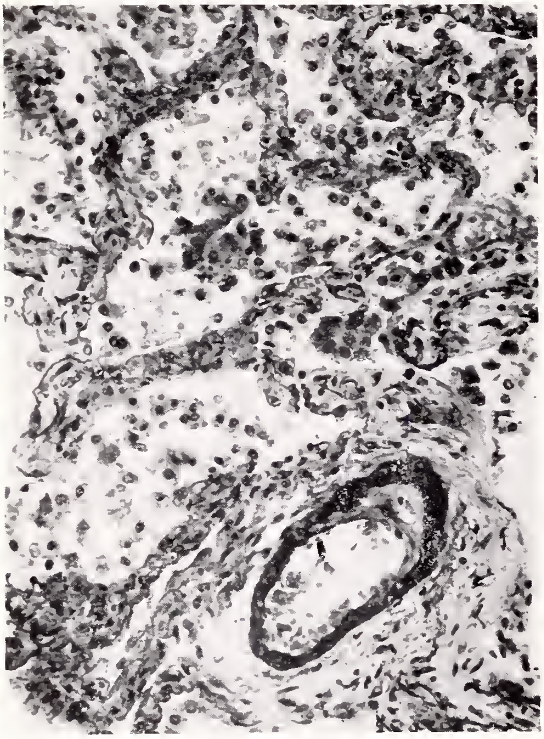

Fig. 2
Photomicrograph X315. Calcification Pulmonary Alveolar Walls

Autopsy Findings. Autopsy revealed an anemic, edematous, well developed white male. There was no free fluid in any of the body cavities. The *heart* weighed 650 grams and showed marked left hypertrophy. The musculature was unusually pale and mottled with pale yellow areas. A similar pigment deposition appeared at the tips of the papillae and along the mitral and aortic valves. The coronaries were soft but contained numerous yellow placques. The right ventricle was somewhat hypertrophied. The *lungs* appeared over-expanded and were rubbery in consistency. Section revealed small amounts of frothy fluid. The *liver* weighed 2925 grams and appeared swollen on section. In the mid portion of the right lobe there was a 3 cm. area which bulged above the cut surface which was lobular and corrugated in form and appeared darker brown than the surrounding tissue. The *adrenals* showed an increase of corticular lipoid. The *kidneys* were remarkable. The right weighed 25 grams and the left 150 grams. Both capsules stripped with difficulty revealing a striking granular surface which was brightly specked with orange yellow crystalloid material. Section revealed a similar infiltration which extended through all of the stroma but did not involve the pelvices. Cut surfaces were gritty on palpation. The atrophic right kidney was eccentrically decreased in size and had a dilated extra-renal pelvis. Both ureters were patent. *Lymph nodes* in the mediastinum were enlarged and soft and edematous.

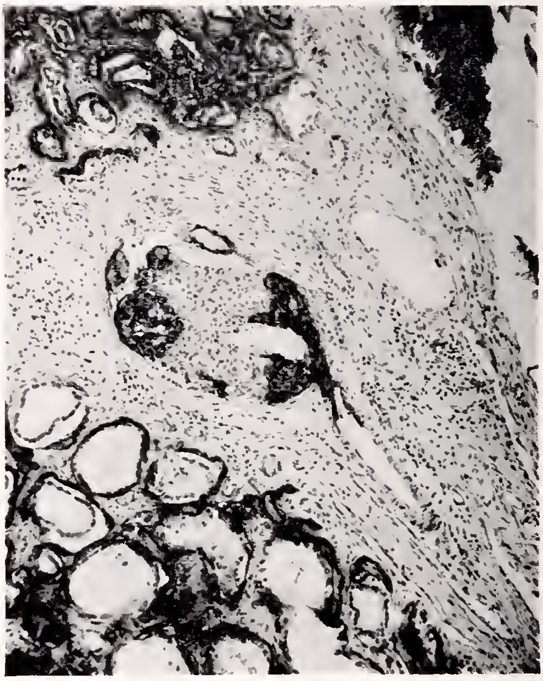

Fig. 3
Photomicrograph X100. Glomerulus Showing Calcification

Chemical examination of kidney tissue by Dr. Charles Todd showed no trace of sulfonamides, but yielded 13 mgm. of calcium per gram of tissue as calcium phosphate.

Microscopic examinations (Figs. 1-5) revealed remarkable examples of metastatic calcification involving heart muscle, pulmonary alveolar walls, glomeruli, renal tubules, and the arteries in the kidney, spleen, heart and lungs. Sections of the kidneys also revealed typical glomerular changes without calcification, indicating an underlying nephritis. Regretfully, no gastric mucosa was sectioned as it frequently is involved in metastatic calcification and no examination was made of the parathyroids. Undoubtedly the latter would have been enlarged. Despite the incomplete evidence, it is our feeling that with x-ray evidence of lack of bone demineralization, the known high serum phosphorus, the clinical and microscopic evidence of long standing renal insufficiency, that the precipitating lesion was probably in the kidneys and that the role of the parathyroids was secondary. However, as the action of the kidneys and the parathyroids is reciprocal, primary adenomatous hyperplasia of the parathyroids cannot be completely ruled out assuming that there might be such a lesion which had not involved the bones and yet had produced metastatic calcification of the kidneys with resulting renal insufficiency and the masking of the usual low phosphorus by retention of this mineral.

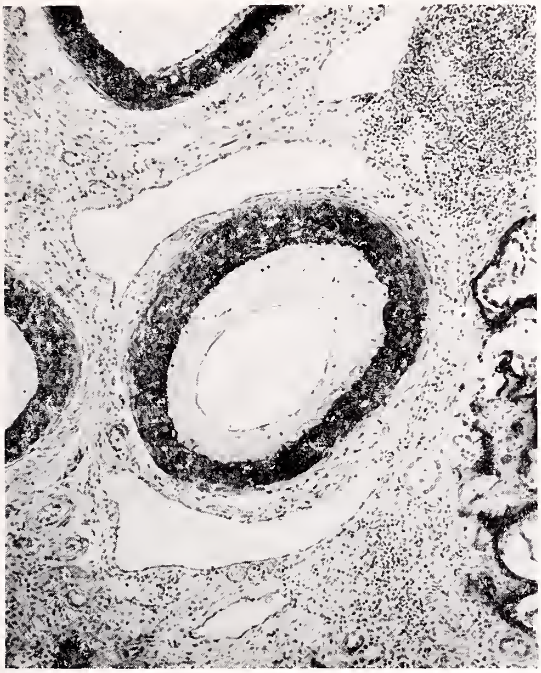

Fig. 4

Photomicrograph X100. Calcified Arteries in Kidnev

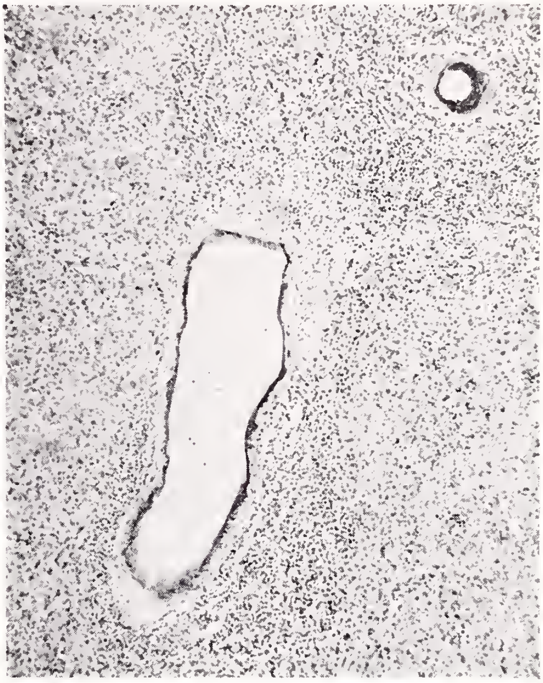

Fig. 5

Photomicrograph X100. Calcified Arteries in Spleen

Discussion

Dr. W. W. Lattomus: Since this patient's condition was not suspected before death an examination of the long bones was not done. Flat plate of the chest and abdomen showed no demineralization of the vertebrae, pelvis or ribs, and no calculi were visualized. In spite of the large amount of calcium found in the kidney tubules, the kidneys were poorly outlined. In primary hyperparathyroidism the usual bone changes are: demineralization, and later a generalized osteitis fibrosa.[7] Albright, Aub and Bauer state that "early bone changes may be so slight as to defy diagnosis without comparison of the affected with normal bones of the same patient." The calcium is stored mainly in the trabecular layer of the epiphysis and this should be the first place to show bone change.

Secondary hyperparathyroidism or renal rickets shows less bone change than the primary type and these changes are usually rachitic in long bones, cystic changes being rare.

DR. J. W. HOWARD: Pathological calcification has been arbitrarily divided into 1. Dystrophic resulting from deposition in dying tissue; 2. Circumscribed calcinosis associated with scleroderma; 3. Arteriosclerotic; 4. Nephrolithiasis; and 5. Metastatic.

The latter, which is exemplified in this case, was originally described by Virchow[2] in 1855 when he reported five cases of destructive disease of bone associated more or less with renal insufficiency. In 1932, Barr[1] reported forty-two cases and noted that the organs involved did not show any previous lesions and that the metastatic calcification chiefly occurred in the kidneys, gastric mucosa, lungs and vessels, and occasionally in the left auricle of the heart. Other examples of metastatic calcification have been reported in bone diseases including myelogenous leukemia, sarcoma, carcinoma, osteomyelitis, and hyperparathyroidism and Barr felt that it was difficult to find any case in which renal disease could be definitely excluded.

The relation of metastatic calcification to hyperparathyroidism has undergone considerable investigation since Albright[3] emphasized these conditions. Originally he classified the renal involvement into three types:

1. Calcium precipitation in the pelvis and and papillae with resulting pyelonephritis.
2. Calcium precipitation in the renal tubules with resulting sclerosis and insufficiency.
3 Precipitation in the kidney as one of several organs with resulting acute renal failure and prompt mortality.

Today it is well established that hyperplasia of the parathyroids may result from marked long standing renal insufficiency. Pappenheimer[4] showed in 1935 that in miscellaneous nephritic conditions that there was from 50-100% hyperplasia. Later in 1936[5] he produced experimental hyperplasia of the parathyroids and a clinical condition not unlike renal rickets in rats by decreasing the amount of renal tissue.

In 1941 Herbert et al[6] reported sixteen confirmed cases of renal disease with metastatic calcification and hyperplasia of the parathyroids. They felt that the hyperplasia resulted from the elevated serum phosphates due to long standing renal disease. To compensate for the high phosphorus there was an associated fall in serum calcium which frequently was not sufficient to prevent oversaturation of calcium which was augmented by the action of the parathyroids raising calcium at the expense of the long bones. As the phosphorus remained high metastatic calcification occurred.

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ROGER'S CONGENITAL HEART DISEASE*

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Too many times physicians are content to diagnose a heart condition as "congenital heart disease" and to stop there. This is no more justifiable than to say a patient has lung disease without attempting to classify the type of pathology, not only from an etiological point of view but also from that of structural defects. This is particularly true since, in modern times, surgery has made contributions toward correcting certain of these defects. Gross of Boston, has perfected an operation for the ligation of patent ductus arteriosus. Blalock and Taussig, of Baltimore, have perfected an operation in the treatment of tetralogy of Fallot and recently Gross has successfully operated on coarctation of the aorta. The present case report, however exemplifies a condition which had been diagnosed as rheumatic heart disease and the patient in question was restricted in his normal activities—playing basketball, football and other normal sports of youth. After having established what we feel is a diagnosis of congenital heart disease with interventricular septal defects, this boy for two years has been allowed to participate in any type of sport as any other normal boy chooses to do. As a result, he was taken from the state of invalidism to a state of normality. Therefore, the importance of trying to establish a correct diagnosis is self-evident.

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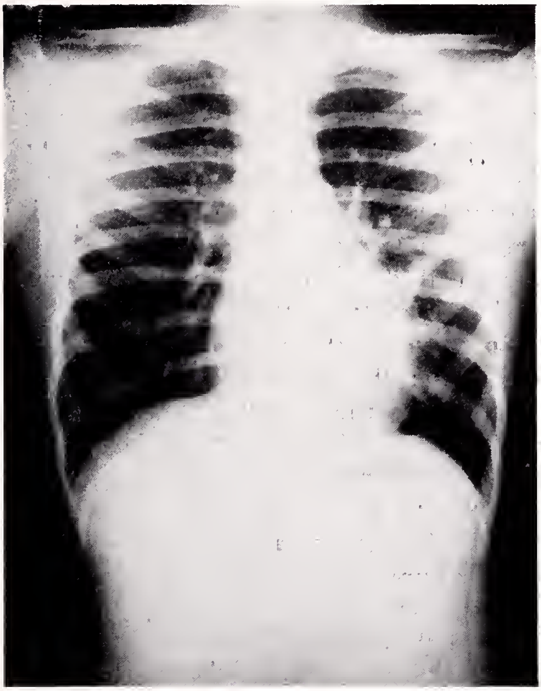
* From the Heart Clinic, Delaware Hospital.

To my mind it is just as important not to make an invalid out of a heart case unnecessarily as it is important to restrict and restrain other cases with heart conditions. To quote Roger from the Bulletin of the Academy of Medicine in 1879 as translated by Dr. Paul White, "An exact diagnosis ordinarily demands in heart disease an active persistent treatment. If, on the other hand, there is congenital malformation of the heart, vigorous treatment is useless and even harmful. To show, thanks to precision in diagnosis, when to act in one case and when to refrain in another is to render a service, not only to physicians but also to patients."

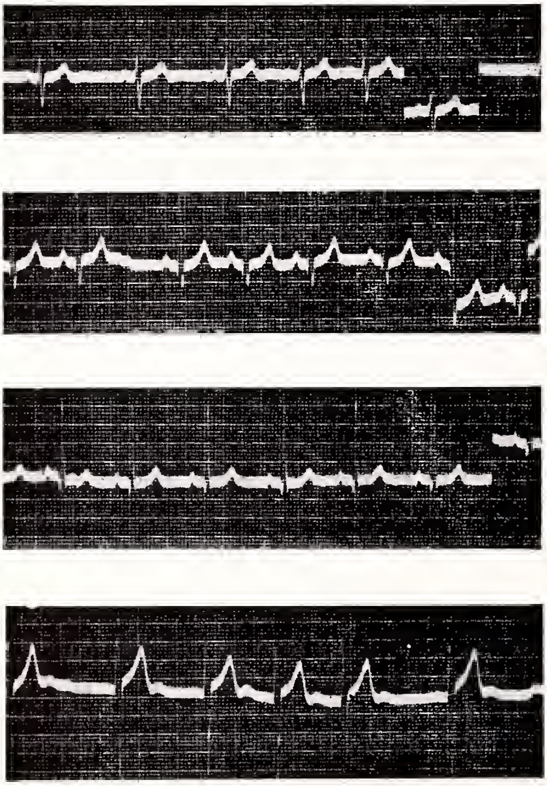

Chest Film

The case in question is a white boy, G. S., aged 10, American, student, reported to the Heart Clinic, having been referred by the school doctor. He had a natural birth, no cyanosis, and as a child developed normally. At the age of 15 months, while being treated for a cold, his mother was told that he had a heart murmur. There were no serious illnesses, his activities were normal. The mother states there was no cyanosis or dyspnea at any time, no unusual fatigue, no evidence of growing pains. He did, however, have occasional nose bleeds. There were no episodes of fever, no undue fatigue. There was normal gain in weight. His family history was irrelevant.

The physical examination revealed a boy normally developed at the age of 8. The tonsils, however, appeared fairly large and possibly diseased. There was no cervical adenopathy. The eyes, ears, nose and teeth were not remarkable. The chest was well developed; the lungs were clear. In the third interspace there was felt a systolic thrill. The left border of the heart was 7 cm.; right border 3 cm.; by percussion; the RST was 4 cm. The rate and rhythm were normal. On auscultation there was heard a loud systolic murmur, grade III. This was heard best in the third interspace just to the left of the sternum and seemed to radiate to the upper third of the precordium. There was a normal response to exercise; there was no diastolic murmur. Spleen, liver, and kidneys were not palpable. There was no clubbing of the fingers and no cyanosis.

The urine examination was negative. There was a mild secondary anemia, the hemoglobin being 77%, with a red count of 4 million, and a differential count normal. The Wassermann and Kahn were negative and the sedimentation time was normal. The electrocardiogram showed a tending to right ventricular preponderance as well as a sinus arrhythmia. The P waves were rather insignificant, not enough to suggest auricular hypertrophy. The conclusion was that congenital heart disease and rheumatic heart disease with mitral stenosis had to be considered. However, the tracing was not specific enough to make a definite diagnosis. A six-foot x-ray plate revealed an increase in the peri-bronchial shadows. The heart shadow was not enlarged but there was some fullness of the conus. The cardiac measurements were as follows: oblique 12 cm.; right border 3½; left border 7; cardio-thoracic ratio 10½ to 23; right auricle 5½; left ventricle was 5; and the arch was 4. A definite diagnosis of congenital heart with interventricular septal defect was made. This is also known as Roger's disease, after the Frenchman who first described it in 1879. This astute clinician not only described three cases clinically, but confirmed them at autopsy.

The differential diagnosis of rheumatic heart disease must be made as well as other congenital heart diseases. Four conditions will give thrills at the left of the sternum. The first is patent ductus arteriosus; this thrill is felt best in the first interspace. Second, pulmonary stenosis: this thrill is heard best in the second interspace. Third, interventricular septal defect; the thrill is felt best in the third interspace. Fourth, mitral stenosis: the thrill is felt best in the fourth interspace. Furthermore, if this were rheumatic heart disease and a thrill was present, a diastolic murmur would be audible because systolic murmurs alone in rheumatic heart disease do not produce a thrill. Furthermore, the systolic murmur of rheumatic heart disease is transmitted to the axilla, while this systolic murmur is heard best in the upper third of the precordium. Patent ductus arteriosus is easily differentiated because of the quality of the murmur. In this condition, patent ductus arteriosus, the murmer is machinery-like and extends through both systoli and diastoli, while in pulmonary stenosis this condition rarely occurs alone and there is marked right ventricular preponderance.



Electrocardigram

The electrocardiogram is consistent with interventricular septal defect in that there is a tendency to right axis deviation because there is an arterio-venous shock. That is, each time there is a systolic beat, part of the blood in the left ventricle is forced back through this opening to the right ventricle. This causes in due time some hypertrophy of the right ventricle, as well as a fullness of the pulmonary conus. This latter was demonstrated in the six foot plate.

COMMENT

The above is a case report of interventricular septal defect, also called Rozer's disease. It should be kept in mind, however, that this defect can occur in conjunction with other congenital heart condition, for example, the tetralogy of Fallot, in which the interventricular septal defect makes up one of the four septal deformities. Other conditions, as transposition of the aorta and pulmonary stenosis and the Eisenmenger complex, all may be accompanied with interventricular septal defect. Of course, the prognosis and limitations of exercise vary according to the other defects, whereas in a case of pure Rozer's disease, as in the above, we are thinking only of a pure septal defect between the right and left ventricles. In Maude Abbott's report of a thousand cases of congenital heart diseases, this defect in its pure form occurred in 50 cases. Several other points could be mentioned of practical interest. Geflan and Levine in 1942 reported the complications of subacute bacterial endocarditis in 57% of the cases. The above patient during his two years' visits to the clinic had an extraction of a tooth on one occasion and on another a tonsillectomy. Each time sulfa drug was administered several days before to thwart the complications of bacterial endocarditis. One cannot state, of course, whether this would have occurred, but it is advisable in any operative procedure or any infection to administer sulfa drug as a prophylactic. Prognosis of interventricular septal defect is not very certain. In Maud Abbott's series of 50 cases, the prognosis of pure interventricular septal defect was 49½ years. Blood pressure varied from 88/50 to 120/68.

Conclusions

The above is a case report to demonstrate the necessity of trying to diagnose correctly congenital heart conditions for three reasons: first, to ascertain the necessity of making or not making an invalid out of an individual; second, to enable one to give some type of prognosis; third, to protect such a case against complications, as bacterial endocarditis.

FAMILIAL MEDITERRANEAN TARGET—OVAL CELL (COOLEY'S) ANEMIA*

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This interesting anemia syndrome[2,3] has been described under various headings in the past, notably Cooley's Mediterranean, target cell, erythroblastic, familiar microcytic, hypochromic associated with splenomegally and refractory to treatment, Oval Cell anemia, and myelosis erythroleukemia.

Apparently this type of anemia is infrequent, or of unknown etiology, and usually occurs in children from families of Mediterranean origin (Italian, Greek, and Syrian). It is characterized by a progressive anemia starting in childhood, accompanied with unexplained attacks of fever, convulsions, a characteristic mongoloid facies in advanced cases, splenogegaly, and changes in the bones due to extreme marrow hyperplasia. The early hematologic signs are changes in the shape, size, and hemoglobin content of the red cells. Most of them are microcytes with a pale center and some hemoglobin in the periphery of the cell. Th hemoglobin may be centrally located, giving the appearance of a target. In severe forms large numbers of erythroblasts are characteristic, together with polychromatophilia, stippling, Howell-Jolly bodies, nucleated red cells, and reticulocytosis. Sickling does not occur, and the platelets are normal.

The bleeding and coagulation time are usually normal. Target cells show an increased resistance in hypotonic salt solutions. Leukocytosis is usually present, accompanied by the presence of myelocytes or myeloblasts in the blood film. The icterus index may be increased, and the urine and feces may show increased amounts of urobilinogen indicating increased blood destruction, the cause of which is at present obscure. Dameshek[1] suggests this may be due to:

1. An increased breakdown of hemoglobin precursors, which cannot be properly metabolized;
2. A possible increased *in vivo* fragility of the target cell, although *in vitro* it has an increased resistance to hypotonic solutions;
3. Some abnormality in the spleen.

Case Report

L. M., aged 6, white male of Italian parentage, was born June 6, 1939 as a 7 month premature, because of the mother's poor health and three months prepartum bleeding. Birth weight was 5 lbs. 8 oz. When the child was 21 days of age he developed diarrhea and the weight dropped to 5 lbs. He was hospitalized and given three blood transfusions of 35 cc each, despite which the hemoglobin dropped from 13.5 (86%) to 9.5 gms. (61%). During this admission the white count varied from 11,250 to 14,200. At two years of age he received one inoculation for diphtheria and at 4 years he had measles, both of which were associated with fever and convulsions. On March 27, 1945, he had an attack of "indigestion" followed by fever and convulsions. The temperature dropped to normal within 24 hours. Physical examination revealed only an infected throat. Hemogram revealed RBC 4.6; hemoglobin 9.6 gms., 61%; WBC 14,550; polys 88%; lymphocytes 10%; monocytes 2%. On July 31, 1945, the patient was again hospitalized because of fever, anorexia, pallor, irritability and repeated attacks of vomiting, fever and convulsions during the previous three months. Physical examination again was essentially negative with no adenopathy, splenomegaly, bone tenderness or abnormality, no heart murmurs or jaundice.

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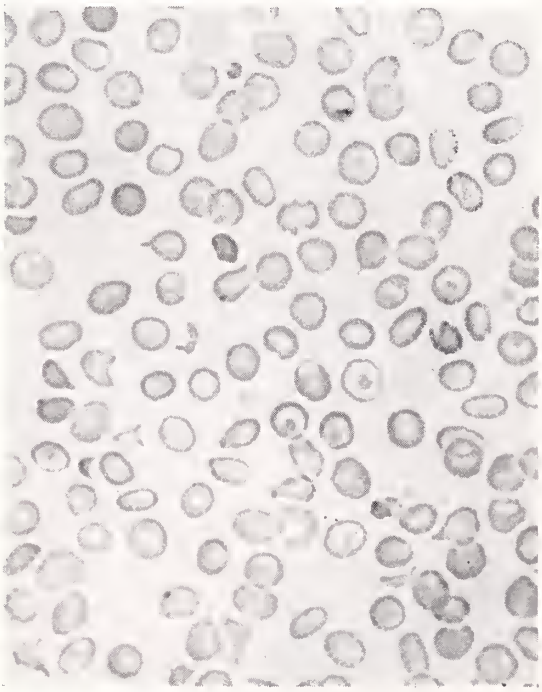
* From the Departments of Medicine and of Laboratories, Delaware Hospital.

ECG showed a sino-auricular tachycardia with a rate of 150 and a tendency to right axis deviation. X-rays of lungs, chest, abdomen, skull and long bones appeared negative. Urinalyses, allergy tests, stool for parasites, serology and febrile agglutinins were all negative. Blood, stool, throat and urine cultures showed no pathological organisms. Blood smear for malaria was negative. Coagulation time 4 minutes; bleeding time 2 minutes, blood platelets 340,000; reticulocytes 1.7%. During this admission the temperature averaged 99° to 100° F, and on three occasions was elevated to 104° F. Penicillin and sulfonamide drugs had no effect on the temperature curve. The red blood count averaged 4.5, while the hemoglobin fell from 11.3 gms. to 8.7 gms., and the white blood count varied from 5,400 to 15,900 and frequently showed a moderate polymorphoneuclear shift to the left. Morphological studies of the red cells at this time showed moderate variation in size and shape and a number of cells with deficient and eccentrically placed hemoglobin and numerous target cells with centrally placed hemoglobin. (Fig. I). The anemia appeared microcytic in type, with a mean corspuscular volume of 69.3 cubic microns and a mean corpuscular hemoglobin concentration of 20%. Basophilic stippling was occasionally noted. Fragility studies revealed hemolysis beginning at 0.40% and completing at 0.18% indicating definite increased cell resistance. Examination of other members of the family likewise revealed the presence of increased hypotonic resistance of the erythrocytes. (Table 1).



Photomicrograph of blood smear (X860) of case showing marked variation in size and shape of the erythrocytes. A number of red cells are seen with deficient and irregular eccentrically placed deposits of hemoglobin, and target cells (with central dark spots)

Table I

	Fragility	**Hemoglobin**	**RBC**	**Target Cells**
Patient	0.40%-0.18%	9.5 gm.	4.8	many
Control	0.44%-0.32%	——	——	——
Mother	0.42%-0.28%	11.4 gm.	3.6	negative
Sister	0.36%-0.20%	11.8 gm.	4.5	negative
Brother	0.38%-0.24%	13.0 gm.	4.5	several

On August 30, 1945, and September 2, 1945, two blood transfusions of 250 cc. each were administered and the hemoglobin was brought up to 13.3 gms. (85%). This improvement was not maintained in spite of constant therapy with iron, oral and parenteral liver, and high caloric diet; and by August 3, 1945, the hemoglobin had fallen to 8.4 gm. (55%). The child remains pale, but otherwise well, active and alert, and weighs 49 lbs. and measures 46'' in height.

Summary

A case of Mediterranean anemia is presented which has the following characteristics; a history of intermittent, frequent, prolonged, and high fever, preceded by chills, and followed by convulsive seizures when the fever rises to 104° or over. The fever gradually drops and the child feels better. Some pallor, marked anorexia, irritability and vomiting accompany the attacks of fever. Occasionally epistaxis has been reported. This condition does not respond to chemotherapy, sulfonamides, or penicillin, nor to the usual anti-anemia therapy, such as iron and liver. Small transfusions seem to improve the patient and the blood picture for short periods of time.

Diagnostic findings[1] include: reduced hemoglobin, hypochromia, low color index, abnormalities of the red cells including the presence of target cells, reticulocytes and stippled cells, increased resistance to hypotonic saline, and complete refractories to iron therapy. There is a racial factor as evidenced by the familial tendency to show decreased fragility and the presence of target cells in a brother and anemia in a sister and the mother. There is no evidence of such conditions as hepatic disease, steatorrhea, bleeding, or lead poisoning.

At the present time the child is under iron, liver and vitamin therapy. A high protein diet is maintained, although the child is very uncooperative in taking food. A transfusion of 250 cc. is given at intervals when the hemoglobin drops markedly.

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STREPTOMYCIN

A Review of the Literature

Elvyn G. Scott, M.T.*
Wilmington, Del.

Introduction

The need for an antibacterial agent which is therapeutically effective against the pathogenic gram-negative rods is both real and urgent. Among these microorganisms insensitive to penicillin are the colon bacillus, the typhoid-dysentery bacilli, those causing brucellosis and tularemia, and the secondary invaders *proteus, pseudomonas,* and the Friedlander group. Recent reports on an antibiotic, streptomycin, which is effective against these bacteria, in addition to possessing the great advantage in being nontoxic to the human host, is therefore of great interest.

Streptomycin was first described by Schatz, Bugie and Waksman[1], of Rutgers University, in January, 1944. It was obtained in culture filtrates of a strain of *actinomyces* similar in morphology and cultural characteristics to *actinomyces griseus,* because it was produced by one of the aerial-myceliating and sporulating actinomycetes, generically named *streptomyces.* There is an apparent relation between streptomycin and streptothricin, described by Waksman in 1942, although the former appears to possess a greater antibacterial spectrum and lesser toxicity for animals than its predecessor.

Like other antibiotics, such as penicillin, the potency of streptomycin is described in units of antibacterial activity. As defined by the Rutgers group[2], a unit is "that quantity of the antibiotic agent which inhibits the growth of a given strain of *Escherichia coli* in 1 ml. of nutrient broth or agar." In this respect, when the action of both penicillin and streptomycin were studied against *staphylococcus aureus* (strain SM),[3] it was found that one unit of penicillin represented approximately 12 times as much antibacterial activity as one unit of streptomycin.

Streptomycin is prepared as the fairly stable hydrochloride, and is readily soluble in water. The potency of the first lots varied from 110-130 units per mg., but Robinson[4] has recently reported the production of preparations containing 500 units per mg. Based on milligrams of crystalline substance, a daily dose of 100,000 units of penicillin weighs 100 mg., whereas a daily dose of 4,000,000 units of streptomycin weighs 800 mg.

Experimental

Jones[2] and Waksman[5] first reported that experimental animals could be protected against lethal infections of certain gram-negative pathogens by treatment with streptomycin. Heilman[6] then demonstrated that in control mice infected with *Pasteurella tularensis* a mortality of 100% was obtained in 4 days; whereas, in a similarly infected series receiving 1000 units per mouse per day for 10 days, the mortality was 0%. He suggested on the basis of these findings, that the drug may be useful in the treatment of tularemia in man. On Waksman's report[7] that streptomycin was capable of marked bacteriostatic and bactericidal effect *in vitro* against a human strain of *mycobacterium tuberculosis,* Feldman and Hinshaw[8] investigated its effect on experimentally infected guinea pigs. These workers concluded that streptomycin exerted a striking suppressive effect, in guinea pigs, of the pathogenic proclivities of two human strains of *mycobacterium tuberculosis,* comparable to those observed with certain of the sulfone drugs; and furthermore, that this antibiotic is well tolerated by the guinea pig. *In vitro* tests[9] with 9 different strains of organisms of the Friedlander (*Klebsiella*) group indicated that streptomycin inhibited their growth. *In vivo* tests with 3 of these strains inoculated inter-abdominally into mice, show-

(*Concluded on Page 18*)

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VOL. 18 JANUARY, 1946 No. 1

PARRAN'S LETTER

A letter sent by Surgeon General Thomas Parran of the U. S. Public Health Service to all officers of that governmental agency on the National Health Program has "created amazement and consternation" within the medical profession, according to an editorial in the January 12 issue of *The Journal of the American Medical Association.*

The mimeographed letter sent out by Surgeon General Parran, under date of December 10, follows:

> Enclosed is a copy of House Document No. 380, which is the full text of President Truman's message to the Congress on a national health program, a subject of the highest importance to every citizen. The message contains a comprehensive analysis of the health problems of the country and recommendations as to the pattern of legislation to deal with them.
>
> It is a source of particular satisfaction to all of us who labor for the public health advancement that this should be the special subject of a Presidential message. For the first time we have the major elements of a national health policy officially stated in comprehensive terms. This has been a goal of all public health workers for many years, and the enunciation of such a policy by the Chief Executive gives the Public Health Service definite objectives for its future work.
>
> On the same day as the message was delivered Senator Wagner introduced (for himself and Mr. Murray) S. 1606, and Representative Dingell introduced H. R. 4730, designed to implement the proposals of the President. In addition, several bills are pending in the Congress dealing with special phases of the President's legislative program. These include the hospital construction bills, the national mental health bills and the stream pollution bills, each of which would impose substantial additional responsibilities on the Public Health Service.
>
> The appropriate executive agencies of the government have been specifically instructed by the President to assist in carrying out his legislative program as presented to the Congress on September 6. The President wrote to the administrator of the Federal Security Agency on October 4 requesting him "to take primary responsibility for legislative measures necessary to carry out the part of my message (Sept. 6, 1945) outlined in section 21 concerning a national health program to provide adequate medical care for all Americans and to protect them from financial loss and hardship resulting from illness and accident."
>
> Every officer of the Public Health Service will wish to familiarize himself with the President's message and will be guided by its provisions when making any public statement likely to be interpreted as representing the official views of the Public Health Service.
>
> THOMAS PARRAN, Surgeon General.

Commenting editorially on the letter, *The Journal* said:

"If the fourth and fifth paragraphs of this letter say what they seem to say, the President of the United States has instructed the executive agencies of the government to get behind his legislative program for the extension of health. The Surgeon General of the U. S. Public Health Service goes into action, ties the Wagner-Murray-Dingell bill right into the program and at least hints to his officers that they had better be careful about making any public statements with regard to the message.

"Many of those addressed in this instance are physicians in the private practice of medicine in the United States. They volunteered their services in the formation of hospital units to aid the people of this country in an emergency; they continued their membership in the Reserve of the Public Health Service after the war itself ended because it seemed to be desirable to have an emergency service available. If, however, men are to be directed in their thinking or muzzled in their speaking incident to their desire to be of service to the health of the nation, their rights as American citizens will have to prevail. Reserve officers will have to consider seriously whether or not they wish to maintain any official connection with such a federal agency. Incidentally, it might have been better if General Parran had, in these final two paragraphs said in shorter and clearer sentences exactly what he meant to convey."

STREPTOMYCIN

(Concluded from Page 15)

ed a marked protective effect on those treated with streptomycin; however, more prolonged treatment was necessary to protect mice when infected intranasally. These results suggested to Heilman that streptomycin may be useful in the treatment of infections in man caused by microorganisms of the Friedlander group. In a further series of experiments with mice and hamsters infected with *Borrelia novyi* (relapsing fever) and *leptospira icterohemorrhagiae* (Weil's disease), Heilman[10] concluded that streptomycin exerted a considerable protective effect on the animals, but relatively less than did penicillin. He suggested that streptomycin may be a useful adjunct to penicillin therapy in the treatment of human spirochetal infections.

ABSORPTION, EXCRETION AND TOXICITY IN MAN

Three recent and very comprehensive studies by Heilman et al[10], Anderson and Jewell[3], Zintel et al[14], and an earlier report by Reimann et al[12], on the absorption, excretion and toxicity of streptomycin in man, seem to support the following conclusions:

1. It appears likely that effective blood levels (at least 6 units/cc serum) can be maintained by parenteral administration of 1-4 million units per day, at least every 6-8 hours (Anderson), or 3 - 4 hours (Heilman, Reimann). Following a single intravenous injection the blood level is better maintained than with penicillin. The drug is apparently excreted more slowly by the kidneys than is penicillin, but it is readily absorbed by the general circulation, and excreted for the most part in the urine (25 - 87% of dose injected in 24 hours).
2. The material can be administered by the intramuscular, intravenous, subcutaneous, intrathecal, or peroral routes; curves of serum concentrations after intramuscular or intravenous injections are similar, but only trace blood levels are observed after oral dosage (almost all is excreted in the stool).
3. Streptomycin diffuses to a slight extent from the blood into the cerebrospinal fluid; however, intrathecal administration of a single dose (10 - 100,000 units) shows antibacterial levels in the spinal fluid for at least 24 hours.
4. Early side reactions are not alarming, and serious and uncontrollable toxic reactions have not been observed following administration of: single intravenous doses up to 600,000 units; continued parenteral doses for periods of 2 - 3 weeks totaling 2.7 - 18.2 million units; or single intrathecal doses of 10 - 100,000 units of the drug.

CLINICAL TRIAL

At the date of this writing, the literature is meager on the clinical evaluation of streptomycin, and most reports are inconclusive as to its effectiveness. Several abstracts are offered as illustrations.

1. In two patients with respiratory tract infection in which Friedlander bacillus was persistently present in the sputum, Herrell reported that these organisms promptly disappeared after treatment with streptomycin.
2. Hinshaw and Feldman[13] have used streptomycin in the treatment of 22 patients with clinical tuberculosis since December 1944, and have noted no serious toxic effects after prolonged administration of large doses. These workers stated that "any decision as to its therapeutic efficiency must await more extensive study."
3. Anderson and Jewell[3] report 3 cases of *Eberthella typhosa, Salmonella group B* and *hemophilus influenzae* infections, primarily to illustrate the apparent lack of significant toxicity following prolonged administration of the drug. These authors stated that "no conclusions concerning the efficiency of streptomycin can be drawn from them." All 3 cases recovered.
4. Reimann et al[12], in treating 5 cases of severe and moderately severe typhoid fever with the drug, reported recoveries in 3 cases during treatment. Reimann states that "it is unsafe to judge the therapeutic value of streptomycin in the study of only 5 cases of typhoid, a disease of unpredictable severity and duration. But the presence of streptomycin in the blood, urine and feces in amounts more than enough to kill typhoid bacilli in the test tube, and the

> clinical improvement during therapy of 3 patients selected because of the severity of their attack, strongly suggests that the substance contributed to their recovery, if it did not actually cause it.''

It would seem evident that streptomycin, like penicillin, reacts differently with various strains of pathogenic microorganisms. While final evaluation of the antibiotic must await further clinical trial, streptomycin gives hope of a drug that will be active against a range of bacteria not acted upon by penicillin.

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Intoxication

The blood test for drunkenness, which determines the amount of alcohol in the blood, is now generally accepted as an adequate standard for medical and legal interpretation of the degree of intoxication, it is stated in the June 23 issue of *The Journal of the American Medical Association.*

The blood test is considered to give an accurate picture of intoxication because the alcohol in the blood is responsible for the distribution of alcohol to the brain and all body fluids. Since alcohol tends to disperse itself uniformly in the water of the body, examination of any tissue or body fluid gives information regarding the unchanged or unoxidized alcohol in the body. It is this unchanged alcohol in the body that is responsible for the degree of intoxication. The alcohol remains unaltered in the body and exerts its effect on the various organs until it is completely oxidized—combined with oxygen—and excreted as carbon dioxide and water. This oxidation process normally takes place at a constant rate, about 10 cubic centimeters of liquor an hour.

The low alcohol readings which result from the urine test are of advantage to the person who may be accused of drunken driving. The alcohol readings from a urine test are lower than those of the blood shortly after drinking, because the urine is filtered from the blood. A more accurate index to the degree of drunkenness may be obtained if a specimen is taken and tested a half hour later.

The value of tests for alcohol in the breath has been established by certain investigators. It is agreed that the expired air closely reflects the alcohol in the blood. It has also been shown that the alcohol in the saliva can be used to predict blood alcohol.

All persons harboring 0.15 per cent or more of alcohol in their blood are to be considered ''under the influence,'' since they have lost, at least to some extent, some of that clearness of intellect and self control that they would otherwise possess. Laws embodying this interpretation have been passed by Indiana, Maine and New York, and the tests have been admitted as evidence in almost every state of the Union.

It is difficult to define stages of intoxication on the basis of alcohol percentages because of the differences in behavior of individuals. There is, however, a definite pattern, based on the fact that alcohol first of all affects that part of the nervous system which in its evolution was developed last and that, as the alcohol percentage rises, the more primitive parts of the nervous system are involved. At the first stage, the higher centers are affected and there is a sense of careless well-being or of bodily and mental comfort. There is no obvious intoxication, and the individual in this state has probably not increased his chances for having an accident. The second stage begins with levels of alcohol somewhere between 0.05 and 0.15 per cent. The part of the nervous system which is now being affected extends to the centers concerned with sensation and skilled muscular functions. Hand-eye coordination becomes impaired and speech may be slurred. The third stage begins at levels somewhere between 0.10 and 0.40 per cent, when the most primitive functions are disturbed. The intellectual processes of judgment are virtually suspended. Death usually occurs when the blood alcohol exceeds 0.40 per cent.

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154.*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60.

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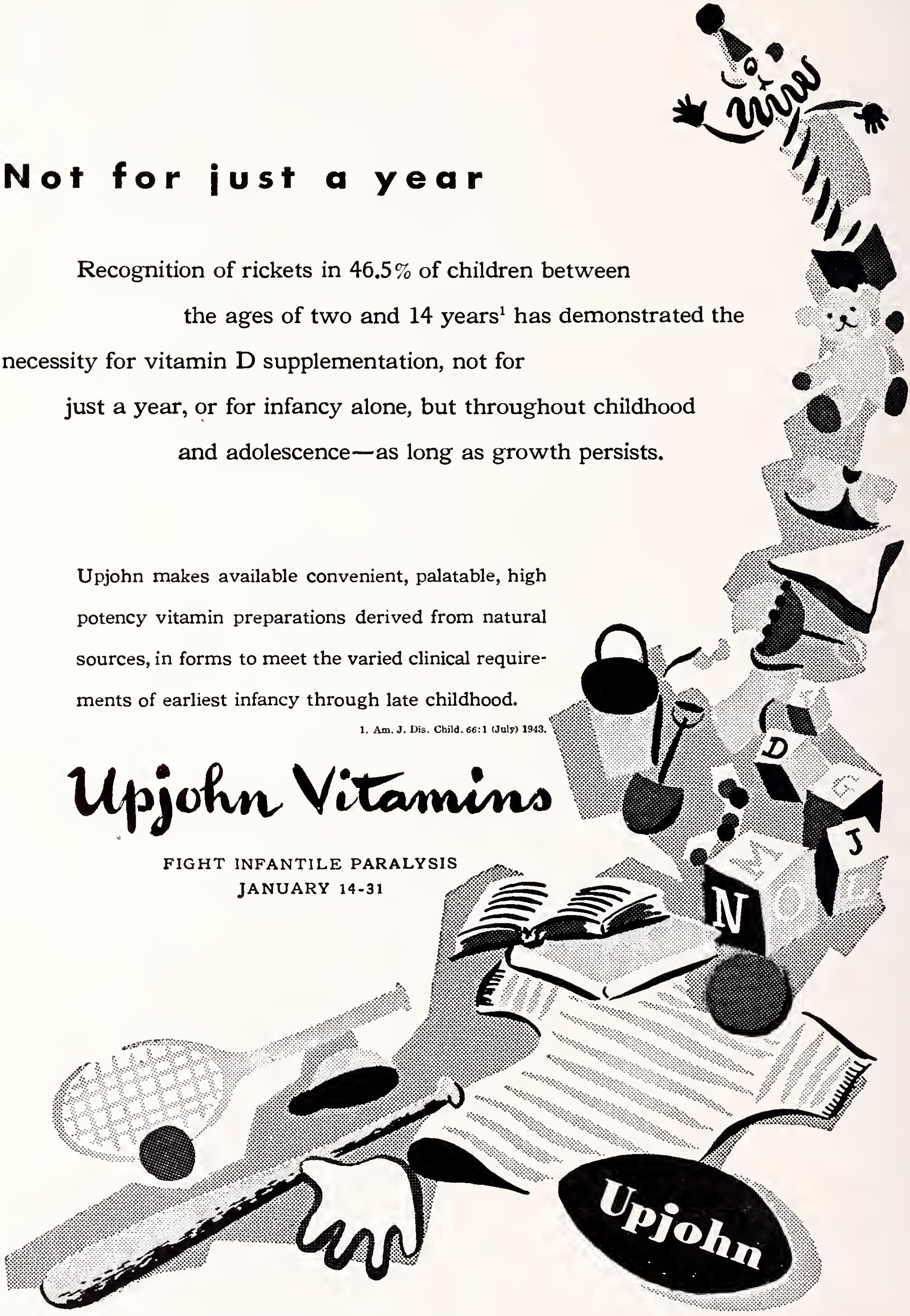

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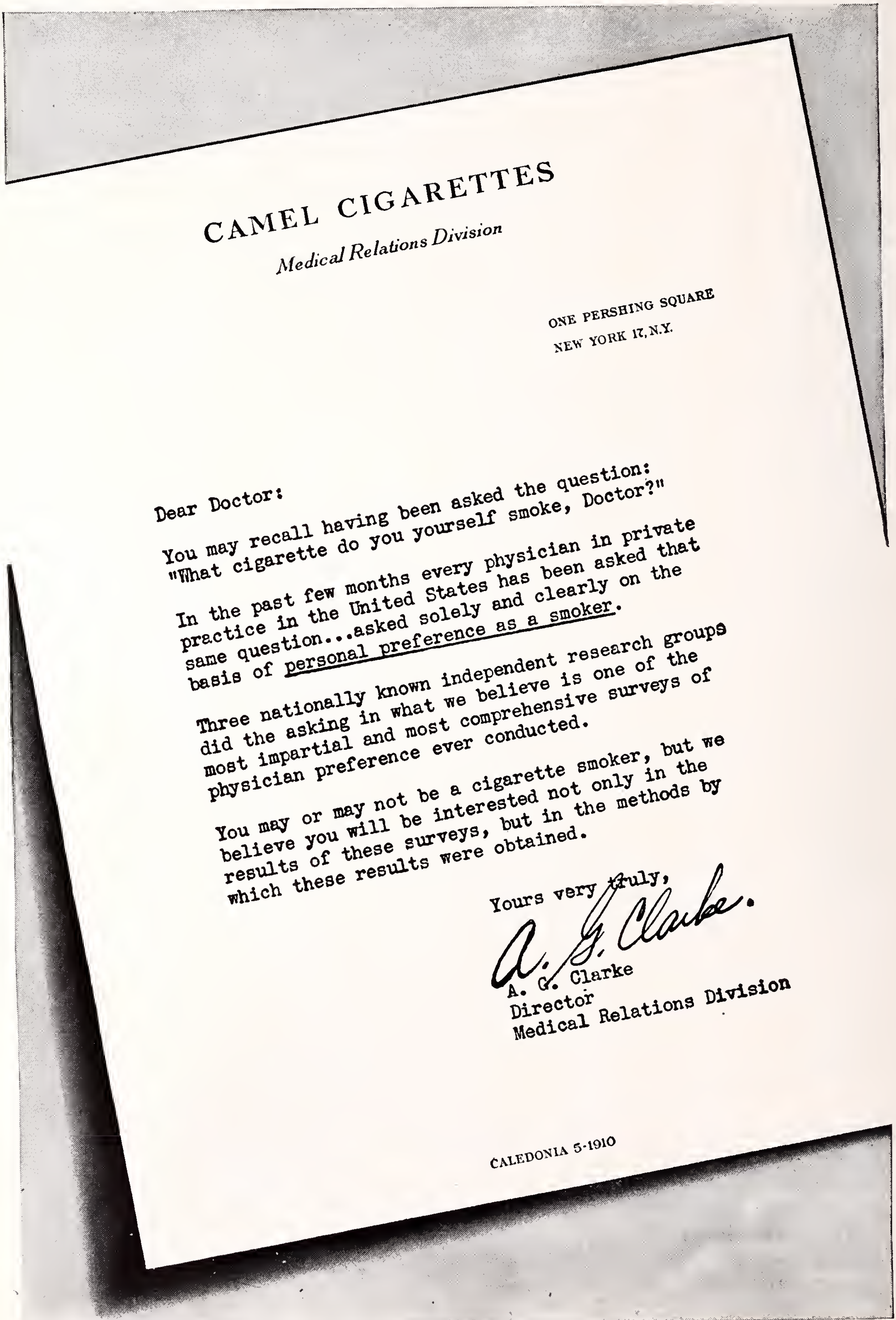

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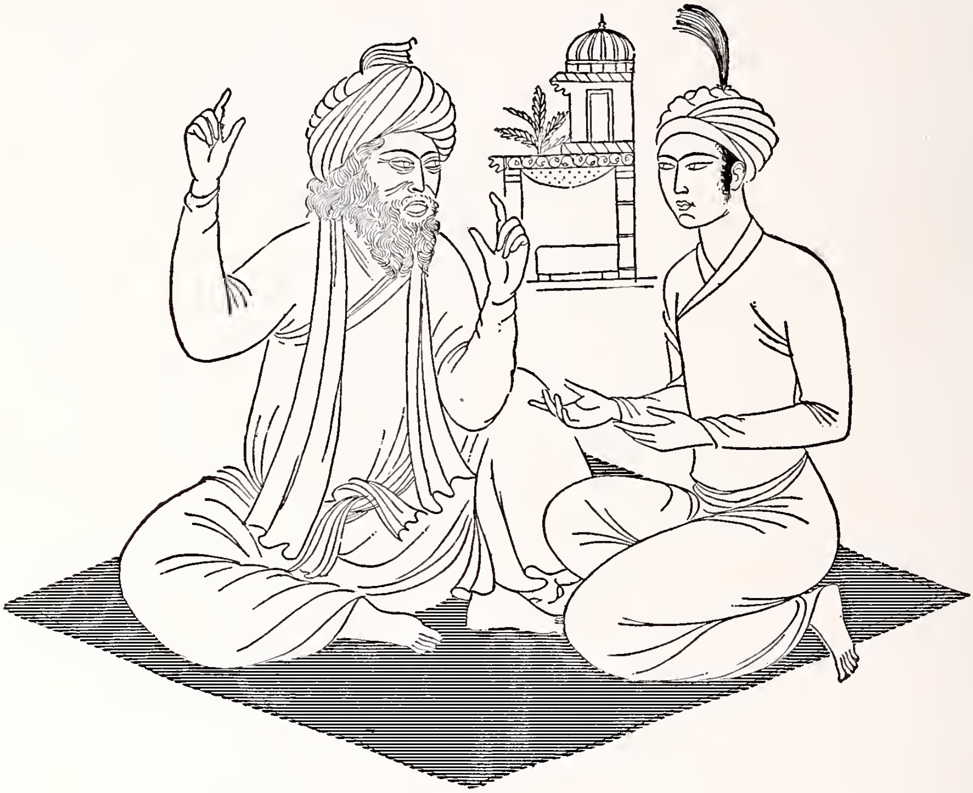

In the City of Bagdad lived Hakeem, the Wise One, and many people went to him for counsel, which he gave freely to all, asking nothing in return.

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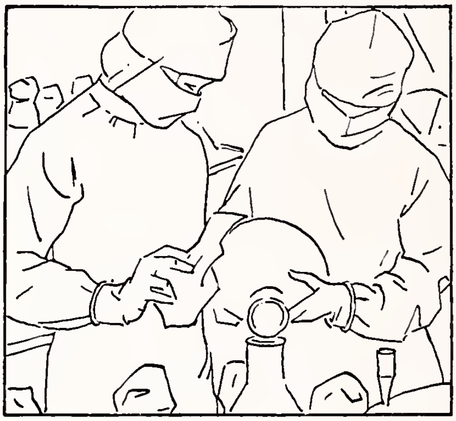

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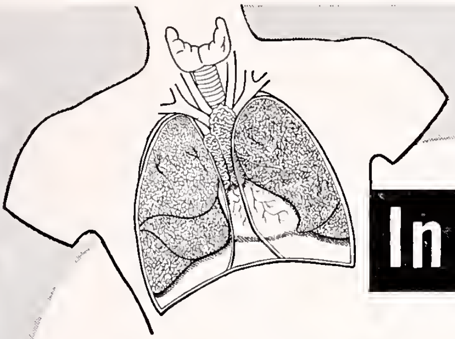

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*Stainsby, W. J.; Foss, H. L., and Drumheller, J. F.: Clinical Experiences with Penicillin, Pennsylvania M. J. 48:119 (Nov.) 1944.

McBryde, A.: Hemolytic Staphylococcus Pneumonia in Early Infancy; Response to Penicillin Therapy, Am. J. Dis. Child. 68:271 (Oct.) 1944.

Stainsby, W. J., Chairman, Commission for the Study of Pneumonia Control of the Medical Society of the State of Pennsylvania: Up-to-Date Facts on Pneumonia, Pennsylvania M. J. 48:266 (Dec.) 1944.

Larsen, N. P.: Observations with Penicillin, Hawaii M. J. 3:272 (July-Aug.) 1944.

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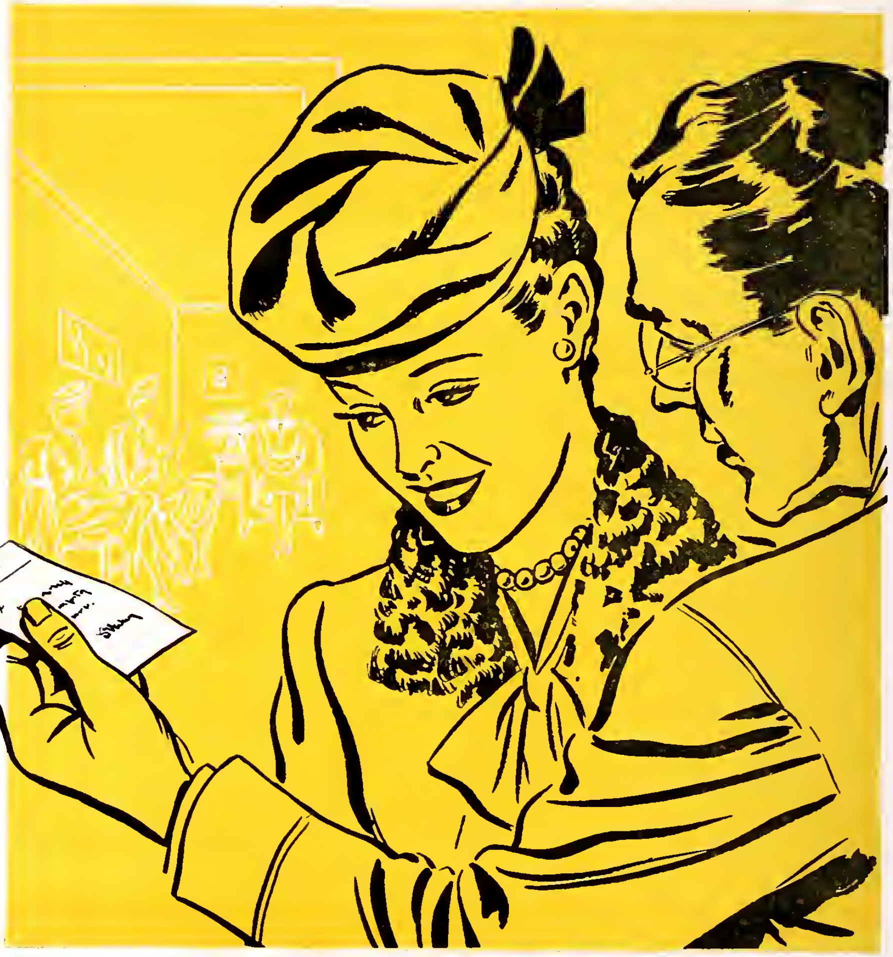

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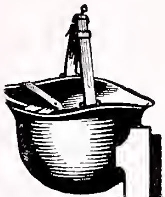

1946

ARMOR AND ARMAMENTARIUM

Guns are silent and grass grows in the foxholes, but there can be no peace treaty in the endless war on mankind's immortal enemy—Disease. Home comes the physician from his lifesaving on the battlefields of man-made death abroad to march again beside his colleagues who have so valiantly held the casemates of health at home.

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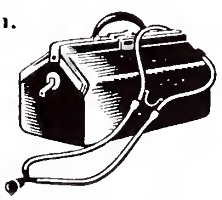
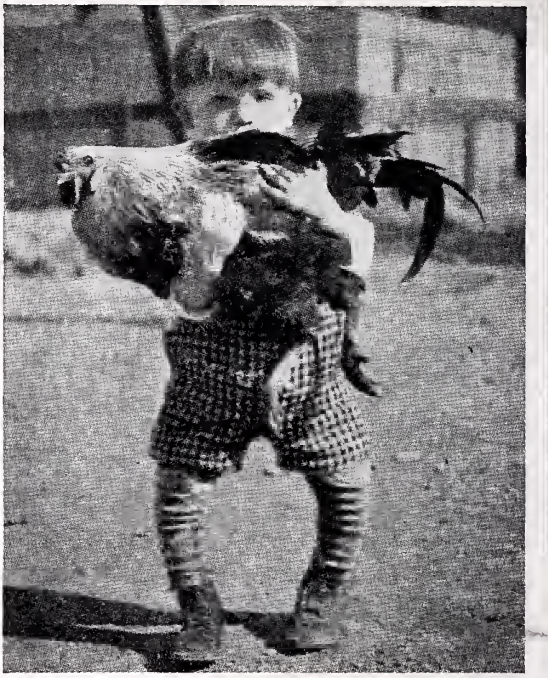
We know that we are joined in this expression by all organizations which seek to play their roles, large and humble, as institutions of supply to those "bound by the covenant and oath, according to the law of medicine." S. H. Camp and Company, Jackson, Mich.





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Fortunately, extreme cases of rickets such as the one above illustrated are comparatively rare nowadays, due to the widespread prophylactic use of vitamin D recommended by the medical profession.

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THE N.Y. ACADEMY OF MEDICINE
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Official Organ of the Medical Society of Delaware

INCORPORATED 1789

VOLUME 18
NUMBER 2

FEBRUARY, 1946

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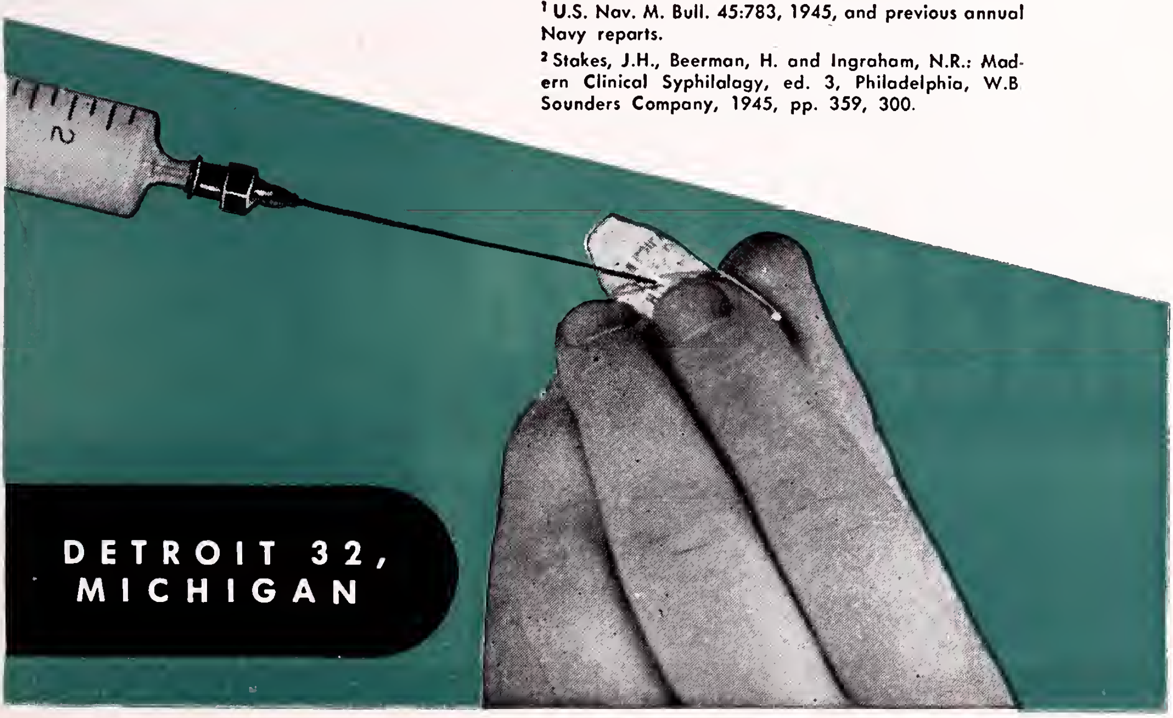
[1] U.S. Nav. M. Bull. 45:783, 1945, and previous annual Navy reports.

[2] Stokes, J.H., Beerman, H. and Ingraham, N.R.: Modern Clinical Syphilology, ed. 3, Philadelphia, W.B Saunders Company, 1945, pp. 359, 300.



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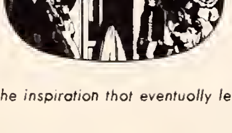

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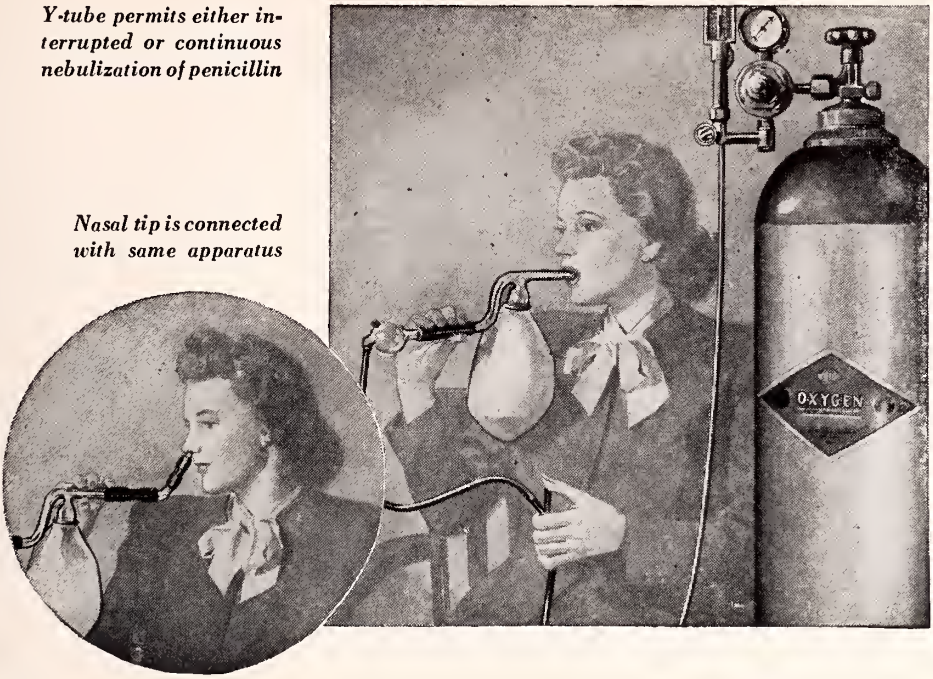

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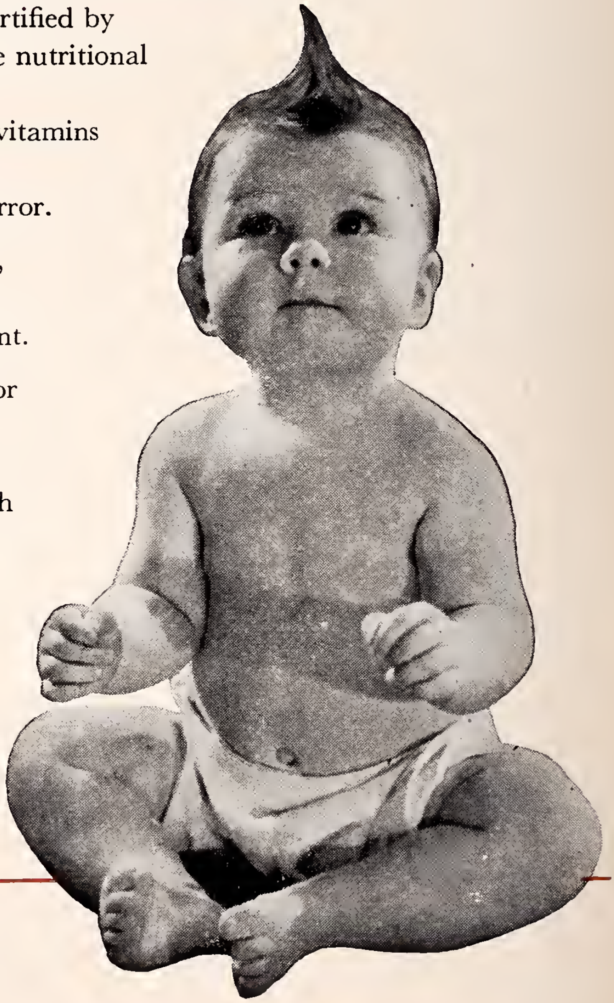

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PRESENT DAY CONCEPTION OF PROTAMINE ZINC INSULIN AND GLOBIN INSULIN WITH ZINC

Special References to Insulin Hypoglycemia and "Insulin Mixtures."

ANTHONY SINDONI, JR., M. D.,*
Philadelphia, Pa.

When the slow acting insulin—protamine zinc—was first introduced into diabetic therapy physicians eliminated the necessity of multiple injections. It enabled many patients to "control" their diabetes with one daily injection of protamine zinc alone or in combination with plain insulin—but not without hypoglycemia reactions.

The marked difference between the protamine and plain insulin rate of action was first realized by the author soon after the development and general use of protamine zinc insulin.[1] It then became apparent that this new insulin compound, protamine zinc insulin, though possessing certain advantages over the unmodified or regular insulin, had marked limitations as well as marked disadvantages. 1. Because of its slow absorption and action, protamine zinc insulin cannot control the hyperglycemia of the high carbohydrate diets or such diabetic complications as acidosis, infection or gangrene. 2. Protamine zinc insulin may involve the physician's giving too frequent injections or too large doses in his effort to reduce quickly the blood sugar and thus producing cumulative effects having such serious consequences as a continuous mild hypoglycemia reaction or even a severe and fatal one. 3. Patients aware of its unfavorable action—such as its cumulative effects—may become fearful of its slow acting hypoglycemic reaction, may fall into a mild mental confusion or into unconsciousness without much warning. 4. Prolonged insulin effect may continue when not much insulin action is desired.

Our subsequent studies of 1,093 diabetics revealed that in 50% of the cases it was necessary to combine plain insulin with protamine zinc insulin so as to help reduce the increased blood sugar caused by the high carbohydrate diets. This group of 50% comprised those patients who required plain insulin with protamine zinc insulin for one meal, either breakfast or supper, and those who in addition to these combined insulins required plain insulin at another meal, i. e., either for breakfast or supper. In none of the patients was it necessary after the stabilization or "control" of their diabetes to give insulin for lunch (midday meal). The age of the patients varied from 6 to 84 years; total daily dose of both insulins varied from 24 to 200 units. In some instances the dose was higher, even totalling 1350 units for a few weeks in one case.

However, in neither groups comprising the 50% were the patients completely free from hypoglycemic symptoms. We observed that a few patients developed a peculiar dread of protamine zinc insulin reaction. They often dreaded sleeping alone because of the frequency of early morning reactions. It was not uncommon for patients to awaken with tingling sensations around the mouth or on the fingers, or in a mental stupor to be succeeded by a profound insulin coma.

However, there were patients, 16% of the cases, whose slight fluctuation of the blood sugar was "apparently controlled" by one injection of protamine. The dose of the insulin varied from 10 units to 80 units. The age of the patients ranged from 28 to 85 years. Although no attempt was made to change to plain insulin, a few of the patients in this group could have been controlled by plain insulin.

In the younger group, however, it was not possible in most instances to control adequately the blood sugar level without combining the protamine zinc with plain insulin. This group appeared to be more dangerous because the physician in prescribing one injection of the protamine insulin was often satisfied by a fasting blood sugar within the so-called ''normal range'' of 140 mg. It was not uncommon to observe protamine zinc insulin patients with a blood sugar of 140 mg. who looked well with no suspicious hypoglycemic symptoms but who developed acute insulin coma or shock in early morning hours, or at intervals when the shock is least expected.

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* Chief of the Department of Metabolism, Philadelphia General and St. Joseph Hospitals; Chairman, Advisory Committee on Diabetes to the Director of Public Health, City of Philadelphia.

The same hypoglycemia reactions occurred when protamine zinc insulin was combined with plain insulin. Thus, to cite one of the many cases, a diabetic male, aged 8 years, was taking 20 units of protamine zinc insulin plus 14 units of plain insulin for breakfast and no insulin for lunch or supper. He appeared to be controlled with this insulin dose, for a period of 2 months maintaining a fasting blood sugar of 140-180 mg. Upon rising one morning after partly dressing himself, he walked into the back yard of his home and fell into a pool of water. Fortunately he was immediately rescued by his mother who summoned the doctor. The child responded immediately to glucose administration. Later he had no recollection of having dressed himself.

It is not uncommon to see patients on protamine zinc insulin develop such signs of mental impairment as lapse of memory, forgetfulness, impaired or blurred vision, loss of appetite, frequent headache, morning nausea and vomiting, weakness in the legs, slight to extremely marked fatigue and increased irritability. In some instances the protamine zinc insulin shock may precipitate severe vascular damage or sudden death. This danger becomes more serious in the elderly patients with extensive cardiovascular sclerosis.

To cite a case, worthy of note, of mental impairment resulting from protamine zinc insulin shock: a male, aged 39 years who has had diabetes for 19 years, taking 60 units of protamine for breakfast. The patient was subject to marked fatigue, tiredness, morning nausea, frequent vertigo spells, headaches, and blurred vision which occurred at infrequent intervals throughout the day and lasted at times an hour or longer. It was not uncommon for him after conversing with a person for an hour or more to find himself regain consciousness in a hospital, and not recall his conversation with the person. As a result of the protamine zinc insulin reaction, he became fearful of any slight disturbance of his physical equilibrium as a possible sign of the onset of insulin shock or coma. To counteract this fear he ate candy or some form of carbohydrate, even though in many instances the disturbances were not signs or symptoms of the onset of insulin shock. This, of course, upset his diet balance. The patient at present suffers from memory impairment, depression, suicidal intent, irritability. As a result of his present mental affection he is unable to hold his executive position in a large corporation.

Thus, to cite one of a few examples of marked vascular damage resulting in the death of the patient from protamine zinc insulin shock is the case of a female diabetic, aged 72 years, who was taking 15 units of protamine insulin for 1 month who suddenly developed a left sided hemiplegia 2 days before admission to my service. The laboratory and physical signs of suspected ''acidosis'' caused the physician to give the patient 50 units of protamine; 15 hours later, 40 units more of protamine. Upon admission to our service the patient was comatose, with a blood sugar 93 mgs. CO_2 54 vols. per. cent. Glucose and other forms of therapy failed to arouse the patient. Electrocardiogram suggested lateral myocardinal infarction. Unfortunately, post-mortem was not obtained, but death was perhaps precipitated by insulin shock, bringing about cerebral thrombosis or hemorrhage, resulting in left sided hemiplegia, hypertensive cardio-vascular disease with decompensation.

Another important reaction from protamine zinc insulin even though combined with plain insulin is that some patients are able to have low blood sugar levels at irregular intervals with no apparent symptoms. These low blood sugar levels persisting at irregular intervals over long periods may slowly or suddenly produce permanent cerebral damage resulting in attacks of convulsions, and not infrequently in the death of the patient.

To cite a case: a young male aged 33 years, who has had diabetes for 18 years with pulmonary tuberculosis, was brought into the hospital by the police in a comatose condition after having been found unconscious on a vacant lot. His insulin dose before accident was 15 units of plain and 18 units of protamine for breakfast, and 10 units of plain insulin for supper. On admission his blood sugar was 52 mg., and carbon dioxide combining power of the blood plasma was 40 mg. In spite of therapy he never regained consciousness and died 5 days after admission to hospital.

Another not uncommon instance is that of a young man aged 26 years, whose diabetes of 3 years duration was apparently well controlled on 26 units of plain insulin and 26 units of protamine zinc insulin for breakfast. The patient had his regular lunch at 12:30 P. M. He remembered reading a newspaper about 5:30 P. M., after which he suddenly became unconscious, with convulsive seizures when brought to the hospital. At the hospital, after regaining consciousness from intravenous glucose, a severe bleeding laceration over forehead was found, probably the result of a fall. Since this accident the patient has had weakness in left arm and hand with numbness and slight impairment of speech. He fears travelling alone without his wife because of his previous protamine insulin shocks.

Immediate and Latent Effects of Protamine Zinc Insulin Hypoglycemia

The increasing, unfavorable reactions of protamine zinc insulin observed by the writer since its inception in diabetic therapy have been disappointing and at times alarming. In spite of the therapeutic value of protamine insulin, the reactions vary from those of plain or ordinary insulin hypoglycemia, i. e., the patients on protamine zinc insulin may have a low blood sugar (hypoglycemia level) for a short interval without apparent signs or symptoms. What the ultimate effects of protamine zinc insulin hypoglycemia, occurring at infrequent intervals with variable duration, will have upon the patients has already been observed on the neurological, cardiovascular and endocrine systems, as well as the fatal results. A review of the highlights of the literature will reveal that the author is not alone in his observations.

The editor[2] of the *Journal of the American Medical Association* makes note of the hope that was entertained for the newer protamine zinc insulin—that it would be less toxic, and less provocative of hypoglycemic reactions over the older unmodified insulin in its effects. This hope, far from being fulfilled, was shattered by innumerable reports of its unfavorable reactions even to the point of being a contributing factor in the death of a diabetic patient. The editor[3] of "The British Medical Journal," in agreement with the editor of The *Journal of the American Medical Association* about the seriousness of protamine zinc insulin hypoglycemia says: "But the increased incidence of grave hypoglycemia since the introduction of delay....action protamine insulin is understandable and merits discussion.

"The effect of a reduction of blood sugar falls on the central nervous system, and the mechanism and pathological results are becoming known. Glucose is the main if not the only fuel of the brain and its metabolism and vital processes stop without it. If the blood sugar supply is cut off by insulin for a few hours (say 4 to 8) irreversible nerve cell changes may occur which cannot be removed by the restoration of the blood sugar...fortunately an extremely rare event."

(a) Effects on Neurological System

Klein and Ligsterink[4] report damage of the brain in patients with diabetes who required large doses of insulin and in whom hypoglycemia reactions was a continuous event which could not be avoided. They describe the close resemblances of these insulin reactions in diabetic patients to those of non-diabetic patients given Sakel's therapy. They are of the opinion that protamine zinc insulin, in keeping the blood sugar level at abnormally low levels for many hours, leads to dangerous effects upon the central nervous system and speak of the rather high percentage of fatal effects in protamine zinc insulin treated diabetic patients. The longer the insulin coma, the greater the cerebral damage. In their observation they report 2 cases of serious hypoglycemic damage to the brain: one, a diabetic patient, aged 22 years, physically sound, treated with regular and protamine zinc insulin, was in hypoglycemic coma for many days. The diabetic's hypoglycemia syndrome resembled the other patient's, a schizophrenic with extensive neurologic disturbances. The intellectual level of the diabetic was that of a complete idiot. Kepler[5] emphasizes the danger of hypoglycemia attacks producing permanent pathological changes to the central nervous system. He cites a case of a patient having recurring protamine zinc insulin reactions admitted to the hospital with serious signs of memory defect.

Sherrill and McKay's[6] post-mortem studies of a series of animals treated with overdoses of protamine zinc insulin conclude that long continued hypoglycemia affects the metabolism of the brain in an adverse manner and gives rise to degenerative change. They found evidence of permanent functional damage to the brain—permanent sensory and motor disturbances as a result of prolonged hypoglycemia. In dogs, after long-continued periods of hypoglycemia, they observed impairment of complete lack of vision or hearing, disturbances of the emotional complex, incoordination, spasticity and even paralysis. They concluded from these observations that care should be taken in preventing unnecessary hypoglycemia reaction, and that shock that results from insulin for therapeutic purposes should be maintained for as short a time as possible. Gellhorn[7] concludes from his studies that hypoglycemia affects the central nervous system in a way similar to that of oxygen deficiency—both reduce the rate of oxidation. It is believed the brain is dependent upon a constant supply of carbohydrate from the blood and that hypoglycemia greatly increases the sensitivity of the central nervous system to oxygen deficiency. Himwich and his co-workers[8] have observed in their studies of cerebral metabolism of patients during insulin shock therapy a diminution of oxygen utilization during coma from 7.09 volumes per cent to 3.07 volumes per cent, an approximately 55 per cent diminished metabolism of the brain. They are of the opinion that the depressed cerebral metabolism and the coma are the direct result of carbohydrate absence—diminished blood sugar resulting from insulin injection, since carbohydrate is the only one foodstuff oxidized by the brain. However, they claim that the brain does not suffer from lack of oxygen during hypoglycemia. In fact, they are of the opinion that the oxygen content of the brain may be increased due to the diminished utilization of the gas.

Cobb[9] is of the opinion that during coma and convulsions, the result of insulin hypoglycemia therapy in mental cases, there is a probable destruction of cerebral nerve cells. Based upon physiological and pathological findings it was strongly suggestive to him that the cerebrum is partially asphyxiated for long periods during treatment. He is also of the opinion that there may be many cells lost without causing mental impairment. Allan and Crommelin[10] claim that hypoglycemia may cause death or permanent disability from cerebral damage. They described the case of a 6-year-old girl, who was receiving 25 units of protamine zinc insulin daily before breakfast, who developed a serious insulin reaction—unconsciousness with twitching and convulsions and stupor for 3 days. When she was aroused, she had developed right sided hemiplegia and aphasia. These complications, although less pronounced, persisted upon her discharge from the hospital. From the last report of her case, fifteen months since the onset of hypoglycemia reaction, she was still handicapped by aphasia, and with epileptic seizures occurring at intervals. They ascribed the organic cerebral changes in this case to the prolonged hypoglycemia reactions of the protamine insulin with severe prognosis.

Schizophrenic patients treated with protamine zinc insulin by Reese and Vander Veer[11] were returned to the use of regular insulin. They found the danger of after-shock was greater, and epileptiform shocks were more frequent with protamine zinc insulin. They also observed that it was impossible to produce uniform shock dose with protamine zinc insulin because the effects of equal doses were not always the same and the dose had to be constantly varied.

Since the store of carbohydrate in the brain is small, Himwich and Fazenkas[12] claim there is utilization during profound hypoglycemia which supplies material for oxidation. The central nervous system ceases to function when there is no available carbohydrate in the blood or in the brain for oxidation. When the brain, according to these investigators, is denied its chief source of energy, glucose, there is a diminished cerebral consumption causing impairment of normal function which has deepseated effects on cerebral physiology.

Malamud and Grosh[13] in describing a case of chronic hypoglycemia caused by islet cell adenoma, correlate the clinical course of convulsions, psychotic manifestations, and organic dementia with advancing destruction of the cerebral cortex and basal ganglia. This diffuse degeneration of the brain is interpreted by them to be due to a direct toxic effect of insulin on the parenchyma. Baker and Lafkin's[14] post-mortem observations of the human brain of hypoglycemia cases found scattered irregularly throughout the brain tiny hemorrhages which were more prevalent in the patients who had the worse convulsive attacks. Berman and Riess'[15] animal studies of the effect of insulin shock, point to a more severe impairment of the newer and less overstrained habits—impairment of learning of a recently acquired alley or elevated maze habit with no impairment of older habits either in the elevated or alley maze.

One of Himwich and Fazenkas[12] explanations for the diminished circulatory rate through the brain during hypoglycemia is the reduction of the heart rate to 50 or 25 per cent of its normal value. They are of the opinion that the slow heart rate caused by increased irritability of the vagus center in the medulla is a signal of inadequate metabolism of the brain—diminished cerebral utilization of glucose and oxygen. However, the heart rate may again become more rapid because of the effects of the sympathetic system. It is during this latter phase that the cardiac criterion is lost and the animal may die of respiratory failure, since the central nervous system is bereft of its necessary carbohydrate.

Drysdale[16] reports two cases. One, a 14-year-old girl, because of the development of acute hysteria was shifted from protamine zinc to regular insulin. She recovered while in the hospital. The other patient, a white, 19-year-old male, developed acute dementia praecox while on protamine zinc insulin, for which asylum commitment was required although his diabetes, as claimed by Drysdale, was adequately controlled. During the course of his insulin therapy previous to the mental condition, 60 units of protamine insulin and 10 units of regular insulin were given. Even though his postprandial blood sugar was 37 mg., no hypoglycemia symptoms were noted. Drysdale raises the question of protamine insulin therapy in diabetes as a precipitating factor in the psychosis of the two above patients, although he is not sure there is adequate evidence to support such a contention.

Wilder and Wilbur[17] in describing symptoms of hypoglycemia produced by protamine insulin, claim that the blood sugar level falls so gradually that the adrenal glands seem not to be aroused, thereby not producing the usual symptoms of insulin shock to which the physician is accustomed. Instead, the only symptoms of hypoglycemia may be of cerebral origin—drowsiness, headache, nausea and fatigue, and since such symptoms often resemble acidosis one may confuse it with this complication. If vomiting has occurred with the hypoglycemia reaction of protamine insulin, it not infrequently complicates the picture. Even though symptomless, Wilder speaks of long continued hypoglycemia as not without peril. In severe diabetes he felt it to be safer to permit the intermittent excretion of some sugar, and for the most part he found the patients felt better and stronger.

(b) Effects of Hypoglycemia on the Cardio-Vascular System

The seriousness of hypoglycemia, as stressed by Soskin and his associates,[18] who observed myocardial impairment from insulin hypoglycemia, emphasizes the danger of protamine zinc insulin hypoglycemia upon the cardio-vascular system. Their results were similar to those seen in elderly diabetics with cardio-vascular disease when insulin was administered in therapeutic doses in amounts not causing hypoglycemia. The myocardial impairment caused by insulin was also obtained with low carbohydrate diets and was manifested by complaints of subjective distress in their patients. Blake's[19] survey of seventy-four non-diabetic patients suffering from acute coronary occlusion found 20 per cent to have hyperglycemia or glycosuria shortly after the acute onset of the occlusion.

However, at the end of their convalescence period, the blood sugar returned to normal, or the urine became sugar free without treatment. This latter observation of the sugar metabolism is perhaps indicative that some compensatory action has been precipitated by the acute coronary occlusion, as evidenced in a case with a fasting hyperglycemia of 244 mg. per 100 cc., whereas 110 days after the onset of the coronary attack the fasting blood sugar was 86 mg. and urine negative for glucose. It is apparent that if such a case were complicated by diabetes resulting in a higher blood sugar level and a greater glycosuria, the physician would be tempted to give large doses of insulin or markedly reduce the carbohydrate intake of the diet and bring about a serious reaction or even sudden death. That such catastrophes have occurred is noted by Gigon's[20] case report of a patient suffering from diabetes and acute congestive heart failure who died following the injection of insulin. Blake[19] is of the opinion that high blood sugar is beneficial and not deleterious to cardiac patients, especially the ones with anginal type of cardiac distress.

Explanation by some investigators for the greater content of cardiac glycogen in diabetics than in the normal is that the condition may be due to decreased oxidation of glucose, which is in accord with the disturbed carbohydrate oxidation in diabetes, or to a lowered efficiency of the heart in diabetes.[21] Goldman's[22] observations have revealed that large doses of protamine zinc insulin, though causing only moderate hypoglycemia, produced marked electrocardiographic changes. These electrocardiographic changes he feels are brought on by the deviation of carbohydrate oxidation induced by excessive insulin or absence of available carbohydrate, or by both. He feels that the fundamental change which became evident in altered electrical manifestations was in the chemical dynamics of myocardial activity. After cessation of all insulin, in spite of the absence of hypoglycemic reaction, the changes receded after a period of weeks or months.

Sherrill[23] gives special warning about the use of protamine zinc insulin in the treatment of elderly diabetics with potential or actual coronary and heart disease because of the seriousness of prolonged hypoglycemia. As to the hypoglycemia reactions brought on by protamine zinc insulin, the symptomatic as also the objective manifestations are distinctly different from the ordinary insulin. The patients may have a blood sugar of 59 mg. and still be oblivious as to its existence and not be disturbed in any way. However, the usual symptoms may be drowsiness, vague, mental confusion, lassitude, hunger; or the first symptom may be when the patients lapse into a stupor or unconsciousness. Nevertheless, sweating, palpitation, and tremor are rare. Even in the severe reactions, when revived by glucose, the patient may relapse into another violent hypoglycemia reaction. Walther and Ammon[24] are of the opinion that the injections of small amounts of foreign protein, of which protamine is one, having a molecular weight of 1,560, over periods of years must not be ignored as harmless unless further investigations are made. They feel that late injuries, especially to the vascular system by permanent injections of foreign protein, may be produced. They are of this opinion because fatal shocks have been observed when the first protein containing insulin preparations were given by the medical profession, even though anaphylactic shock in man is hardly possible.

(c) Endocrine System

Mirsky and his associates'[25] observations, in accord with the results of other investigators[26] "that insulin administration results in a decrease in the administration of insulin by the islet tissue," have concluded that the prolonged administration of protamine zinc insulin accentuates this latter condition to such a degree that "disuse atrophy" of the pancreas results. This effect would bring about a reduction of the insulin production and content of the normal islet tissue with a possibility of producing permanent diabetes (permanent hyperglycemia and glycosuria). Based upon these results they advised against the use of protamine zinc insulin as a prophylactic measure in man even though a beneficial effect is obtained in diabetes mellitus.

Mirsky and his associates'[25] studies were substantiated by the work of Rosenbaum and his co-workers.[27] Following the administration of insulin these latter investigators provoked diabetic response to glucose tolerance in a group of non-diabetic subjects. They found that the normal carbohydrate response returned within 36 hours after crystalline insulin and not within 63 hours after the last dose of protamine. They inferred that continued action of protamine zinc insulin over the 3-day period was the cause for the failure of the glucose tolerance curve to return to normal within 3 days of stopping protamine zinc insulin. They expressed the opinion that since insulin can produce a delay in oxidation of carbohydrate in normal subjects upon a liberal diet, similar effects in diabetics seem possible. Based upon clinical observations they stressed the importance of avoiding insulin overdosages, since carbohydrate tolerance may be reduced by it. They advise carbohydrate supply at the interval when insulin effect is maximal, as well as bedtime feeding in protamine insulin patients. One of their explanations for the reduced carbohydrate tolerance is the possible suppression of the pancreas' insulin secreting mechanism. This conclusion is consistent with Best and Baist's[26] observation that the insulin content of the pancreas is diminished under insulin therapy. Prolonged protamine zinc insulin therapy over a period of years is not to be ignored as a possible explanation for the production of atrophy of the pancreas.

A patient on the Metabolic Service, aged 33 years, white, male, who was known to have had diabetes for 18 years and who required 30 units of protamine zinc insulin and 15 units of ordinary insulin for breakfast and 10 units of ordinary insulin for supper, was found in a comatose state in a vacant lot and brought to the hospital with a blood sugar of 52 mg. per 100 cc., and CO_2 40 vol. per cent. He died 6 days after admission to the hospital. Post-mortem examination revealed an extremely soft pancreas, weighing 25 gms. Histologically, hyalinosis of the islets, and autolysis was found.

(d) Fatal Effects

Margolin[28] reports a fatal case of hypoglycemia from protamine insulin. Others[29] describe difficulties with protamine zinc insulin: "diurnal glycosuria...necessity for supplementary injections of regular insulin ... serious, even fatal reactions and often ... the abandonment of protamine zinc insulin in many cases in which its aid would have been most welcome." Protamine zinc insulin hypoglycemia coma has been reported without the usual symptoms.[30] Two fatal cases resulting from protamine zinc insulin have also been reported by these same investigators. Groen and Garrer[31] describe the case of a female diabetic, aged 27 years, unconscious in her 8th month of pregnancy, who died shortly after admission to the hospital with a blood sugar of 20 mg. per 100 cc. She had been on insulin therapy since the age of 15 years. Previous to her admission to the hospital she had been on 12 units of ordinary insulin and 52 units of protamine. In spite of negative urine for sugar or so-called "adequate" control, she was subject to frequent insulin reactions. Just before her admission she was found in profound insulin shock and was given 20 units more of insulin because of mistaken diagnosis for diabetic coma. These authors consider doses of protamine zinc insulin exceeding 40 units too large. "As far as the authors were able to ascertain this was the eighth case in which protamine zinc insulin has been either the main or a contributory cause of death."

Allen's[32] results in his animal studies with protamine zinc insulin, although exaggerated in degree, were similar to those in man: "Loss of appetite, and also the death of rats, rabbits and cats with high doses, seem to show a greater toxicity of protamine than of regular insulin. Delayed action of subcutaneously injected protamine insulin is due to retention at the site of injection, for periods tested up to 62 hours." Allen[33] attributes the fatal results in his group of rats to the cumulative and toxic effects of protamine insulin. However, when the rats were given equal doses of regular insulin because of extreme high tolerance, the effects were trivial in degree and duration. Allen claims that a subcutaneous injection of 10 or 15 units of protamine zinc insulin in a rat produces effects lasting 3 or more days longer than the effects of 500 or 1000 units of regular insulin. He points out that a strong rat can survive 500 or 1000 units of regular insulin whereas 50 or 60 units of protamine zinc insulin is inevitably fatal.

Circumventing Protamine Zinc Insulin Reactions

Since the introduction of protamine zinc insulin many attempts have been made to offset the possibility of its hypoglycemic reactions. First, by changing the diet habits of patients. The most common method has been to rearrange or divide the carbohydrate content of the day's allowance so as to meet more nearly the maximum rate of absorption and effect of the protamine zinc insulin.[34, 35] Others advise extra carbohydrate allowance when anticipating exercise.[36] Second, by maintaining glycosuria and hyperglycemia. Many physicians, realizing the danger of protamine zinc insulin hypoglycemia when urine is "sugar free," or the impossibility of avoiding hypoglycemia with maintenance of physiologic levels of the blood sugar,[37] allow a variable degree of glycosuria to exist.[38, 39, 40] Other physicians advise a lower carbohydrate allowance to keep the patients' aglycosuria;[40] others disregard the long established fundamentals of diabetic therapy and allow glycosuria and hyperglycemia, providing the patient maintains weight, freedom from all diabetic symptoms, absence of ketone bodies in the urine, as protection against protamine zinc insulin hypoglycemia reaction[41]. Third, by changing the time of insulin injection. Many physicians advocate the injection of insulin 60 to 90 minutes before meals in an attempt to obtain the maximum effect when the largest portion of carbohydrate allowance of the meal is absorbed,[42] whereas Mark[43] disregards this procedure and advocates protamine any time of day without its relation to meal time as long as it is given at the same interval. Fourth, by discontinuing protamine zinc insulin when reactions are unavoidable, as during summer months when a combination of hard exercise and sunshine occurs,[36] in uncooperative patients,[34] patients with loss of appetite, or those who do not desire to eat, in severe or complicated cases, allergic cases, patients with marked local or systemic reactions,[44] or in coma patients. Fifth, by avoiding unusual exercise.

The sixth method of attempting to control the blood sugar level and eliminating possible hypoglycemia reactions is by mixing protamine zinc insulin with regular insulin. When protamine insulin was introduced in diabetic therapy we realized its marked limitations, especially its inability to control post-prandial hyperglycemia, as well as the danger it presented of protamine zinc insulin hypoglycemia.[1] Lawrence,[40] realizing the failure of the protamine zinc insulin used alone to release sufficiently rapid insulin to control post-prandial hyperglycemia, expressed the opinion that both insulins (ordinary and protamine zinc insulin) be combined in the same syringe and injected together, the regular insulin controlling the post-prandial hyperglycemia, and the protamine zinc insulin with its prolonged action meeting the basal insulin requirements. This thought is still shared by many today.

However, Wauchope's[45] observations revealed relatively more regular insulin was necessary to produce a rapid effect when both insulins were mixed than when it was given separatively. It was evident that the type of action obtained depended upon the relative proportions of regular insulin and proprotamine zinc insulin, the degree of mixing, and other factors. He suggested that the two insulins be "layered" in the syringe without mixing so as to obtain the separate action of each insulin. However, after injection, mixing is bound to occur and considerable variation might occur in the degree of mixing in the tissues, with consequent effects. This method, stratifying or layering the two insulins, is still advocated by a few clinicians, although not recommended by most advocates of insulin mixtures.

Ulrich[46] emphasized the difficulties encountered in these procedures by recognizing that ordinary protamine zinc insulin contains an "excess" of protamine and that added insulin will combine with the excess protamine and merely make more protamine zinc insulin until an excess of regular insulin is added. He suggested that a mixture containing three parts regular insulin and two parts protamine zinc insulin would be most useful in controlling post-prandial hyperglycemia. Colwell and his associates[47] in their studies with the various mixtures revealed that as the proportion of regular insulin to protamine zinc insulin increased there resulted increased rapidity and intensity of action but decreased prolongation of effect. In subsequent papers Colwell[48, 49] reported the best results with a 2:1 mixture (2 parts regular insulin and one part protamine zinc insulin). He believes that this mixture is much more generally applicable than protamine zinc insulin alone, and that it will adequately control most diabetics and should replace present commercial protamine zinc insulin. In his conclusion he believes that with the present commercial "Protamine zinc insulin, as now manufactured...too often it is necessary to supplement its action by separate injection or admixture with ordinary insulin...Leads to confusion...Use of this type of insulin as now prepared should be abandoned."

Peck [50] states that protamine zinc insulin contains 1.25 mgm. protamine per 100 units of insulin, which is about twice the amount of protamine theoretically necessary to precipitate this amount of insulin. The excess protamine is used to stabilize the preparation and assure complete precipitation of all the insulin. Therefore, if less than one part of regular insulin is added to one part protomine zinc insulin, there will be very little change in activity since the excess protamine will combine with most of the added insulin, thus making more protamine zinc insulin. As the ratio of regular insulin to protamine zinc insulin is increased over 1:1 (e. g. 2:1, 3:2, 3:1, etc.) the excess insulin will provide greater rapidity of effect and corresponding shorter duration of action.

Peck[51] has published a detailed table showing approximate theoretical amounts of quick-acting regular insulin and prolonged-acting protamine zinc insulin which will be available after mixing various proportions of these two insulins. He has recommended adjusting the mixture to suit the needs of each individual patient. Mixtures used in this manner have been termed "tailor-made" or "extemporaneous" mixtures.

MacBryde et al[52, 53] have conducted investigations with a modification of protamine zinc insulin consisting of one part regular insulin and one part protamine zinc insulin buffered to pH 7.2, as is ordinary protamine zinc insulin. In this respect it differs from the extemporaneous mixtures which have a pH more acid than protamine zinc insulin, the exact pH depending upon the amount of regular insulin added. MacBryde originally called his mixture 3;1 insulin because he believed the final product provided three parts protamine zinc insulin action and one part regular insulin action. This terminology was confusing because the term "3;1" more commonly refers to a mixture made by adding three parts insulin to one part protamine zinc insulin. MacBryde now regards his preparation not as a mixture but rather as a new modification of protamine zinc insulin, differing from ordinary protamine zinc insulin only in that it contains half as much zinc and half as much protamine in relation to a given amount of insulin as does commercial protamine zinc insulin. It cannot be made merely by mixing regular insulin and protamine zinc insulin since it must be buffered to pH 7.2. MacBryde now calls this preparation modified protamine zinc insulin or MPZ.

MacBryde disagrees with Peck's view that insulin mixtures need to be "tailor-made" to suit the individual patient. MacBryde believes that his MPZ will satisfactorily control about 90 per cent of all diabetics. He, therefore, feels that MPZ should replace the present marketed protamine zinc insulin and that the use of extemporaneous mixtures is unnecessary and confusing. He further states that the 2:1 mixture, which Colwell believes to be most satisfactory, does not give regular or consistent results and that its action is not as well suited to most diabetics needs as MPZ.

Colwell[49] has recently published an extensive study of the chemistry and clinical application of mixtures. He has demonstrated that the protamine of protamine zinc insulin is not saturated with insulin when one part of regular insulin is added to one part of protamine zinc insulin, as suggested by the earlier work. His studies indicate that the protamine zinc insulin can combine with two and one-half to three times as much insulin as is present in the commercial product. The modified action of these mixtures is, therefore not due to excess free insulin in solution, as postulated by Peck, but rather to the formation of protamine zinc insulin combination which, because of the increased proportion of insulin in the precipitate, release insulin more rapidly than combinations containing less insulin, (or more protamine).

Colwell[49] has shown that many variables affect the composition and nature of mixtures. On the basis of Colwell's work, MacBryde's contention that his MPZ consists of one part free insulin in solution and three parts precipitated protamine zinc insulin seems open to question. Colwell comments as follows on this matter: "The modification used and described by MacBryde is...judged to be a mixture of rapid-acting insulin in solution and protamine zinc insulin in suspension. As the following experiments show, this may be true under given conditions of mixing, but there are many variables including amount of excess insulin, pH, time of contact before buffering, temperature, amount of zinc present and probably stability of proportions even after buffering...

"There is also good reason to believe that even buffered mixtures which do contain insulin in solution originally may lose it by precipitation on standing in the cold a long time.

"These estimates of supernatant soluble insulin demonstrate the futility of planning modifications containing fixed amounts of insulin in solution. Unless exacting conditions of mixing and buffering are carried out, the component of soluble insulin in any mixture, and thus its action, may be variable."

Globin Insulin

The writer's experimental studies, as well as the therapeutic application of globin insulin with zinc, and his experience with protamine zinc insulin since its inception in diabetic therapy have given him ample opportunity to compare both insulins.

My results with globin insulin as based upon diabetics suffering from various complications, have been most encouraging and satisfactory. The youngest patient is a female, aged 28 months who recovered from diabetic acidosis with plain and globin insulin. At present she is on 14 units of globin insulin twice daily and apparently progressing well. The oldest patient is 85 years old, on 14 units of globin insulin. I have employed globin insulin alone as a single or two separate daily injections in 82% of the cases, or in conjunction with plain insulin in 18% of the cases in patients with various complications, both medical and surgical, as well as pregnancies. In one case of pregnancy the mother was delivered normally of twins, both the mother and children doing well.

The diet habits in the globin insulin patients were not altered or rearranged as is the general custom with the slow acting insulins. The patients were all upon the higher carbohydrate diet, 140-240 gms. per day, the distribution adjusted to the patient's desire usually into 3 equal meals, with the general accustomed late evening meal, such as a glass of milk with 3 soda crackers, sandwich or some other form of carbohydrate allowance. If the patient's occupation permitted, the same amount of carbohydrate allowance as given in the evening was permitted at 3 P. M.

Difference Between the Two Insulins in Solubility and Release of Insulin

Hypoglycemia reaction with globin insulin, although rarely asymptomatic, were less frequent and severe as compared with the protamine zinc insulin. Cumulative effeets with globin insulin were not encountered because of the shorter duration of the effect of globin insulin, generally 20 hours, as compared to 27½ hours or more of protamine zinc insulin.

The explanation for the varying rate and degrees of release and absorption of insulin from various insulin combinations resulting in late acute protamine insulin-coma, or latent or delayed insulin reactions as a result of "cumulative" effects, may be explained thus: protamine is a general protein precipitant, whereas globin is not. Hagedorn[54] showed that the solubility of various protamine insulin combinations depended on the amount of serum present. He also recognized the fact that protamine combined with tissue proteins, and suggested that the absorption of insulin could be varied by varying the amount of protamine. Of course variation in the amount of protein in the tissue fluid would likewise modify the solubility and presumably the rate of absorption of insulin from protamine zinc insulin.

Apparently protamine zinc insulin releases insulin primarily by interaction with other proteins, such as tissue fluid proteins. In other words, tissue fluid protein may displace the insulin. A high concentration of tissue fluid protein, or a small proportion of protamine, would favor the release or solubility of insulin, while a low concentration of tissue fluid protein, or a large excess of protamine, would result in a slight and slow solubility and absorption of insulin.

Globin fundamentally differs from protamine in that it is not a general protein precipitant.[55] It seems that insulin is released from globin insulin by simple solution and dissociation; the solubility varies with the pH, being least at about pH 6. At body pH 7.2 globin insulin has considerable solubility, which would account for its relatively rapid release of insulin.

These chemical differences between globin insulin with zinc and protamine zinc insulin is substantiated by the work of Reiner and his associates.[56] They have shown a correlation between the rate of insulin absorption from the site of injection and the intensity of hypoglycemic effect with insulin labelled with radioactive iodine. A rapid decrease in radio-activity was usually associated with low blood sugars. Thus it required 15 times longer for protamine zinc insulin, and about 3 times longer for globin insulin, than for ordinary insulin to reach the level at which 40% of the radio-activity had disappeared. At this point it was found that the protamine zinc insulin curve appeared to be starting to level off, occurring about 12 hours following the injection, whereas the globin insulin curve tends to flatten out after about 65% of the radio-activity had disappeared.

Our higher carbohydrate diets ranging from 140-240 gms. per day, arranged in a manner best suited for the patient instead of meeting the so-called maximum period of absorption of the slow-acting insulins, as has been the general custom, approaches the normal diet as near as possible. Our observations in the past have revealed that 80% of the patients coming to our metabolic clinics after they were given careful diet instructions disregarded them.[57] This finding was also common in the private patients. It is a significant observation for those physicians who insist upon denying their patients food they most desire or who advocate low carbohydrate diets or those physicians who change the diet habits or customs of patients.

CONCLUSION

The writer's observations, as well as other investigators, have revealed that protamine zinc insulin hypoglycemia reactions are not without danger especially upon the cardiovascular; the neurological, and the endocrine systems. Not infrequently these reactions have precipitated fatal results.

Cognizant of the frequency and seriousness of protamine zinc insulin hypoglycemia, physicians have attempted to circumvent them.

The use of protamine and plain insulin mixtures is an uncertain solution and no particular mixture thus far has been generally accepted as satisfactory.

Protamine zinc insulin therapy undertaken by an inexperienced physician may invite serious consequences.

Globin insulin with zinc therapy was found by the author to be preferable to protamine zinc insulin therapy.

Of 786 patients under our care, 82% are being adequately controlled with a single or double daily injection of globin insulin alone, and 18% when it is given with plain insulin.

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CLINICAL CASES FROM THE HOSPITALS

MALIGNANT NEUTROPENIA

Case Report With Recovery

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INTRODUCTION

In 1902 Brown described a disease characterized by a marked decrease of white blood cells which have their origin in the bone marrow[1]. Twenty years later this disease received its first name—agranulocytosis[2]. Since then, more than a dozen different names were suggested, most of them with the ominous adjective "malignant". Truly, up to recent days, the mortality rate of this disease was 70 to 90 per cent of the morbidity. However, modern organo- and chemotherapy, which has already obliviated the pernicious or malignant character of many a disease, will shortly cope with granulocytopenia as well.

Idiopathic chronic neutropenia seems to be quite frequent, while acute fulminant neutropenia is not common[3]. However, the acute forms are readily diagnosed and thus appear more numerous than the asymptomatic chronic states[4].

The clinical signs and symptoms of the acute disease are upper respiratory infection, generalized pains, hyperpyrexia and chills, headache, nausea and prostration. Edema of the mucous membranes of the air passages leads to dyspnoea and cyanosis. The onset is sudden, usually with a sore throat; the development of the full clinical picture is a rapid one. A complete hematologic examination allows its differentiation from the leukopenia of influenza, from aleukemic leukemia, from infectious mononucleosis, and from aplastic anemia. On first examination the typical blood picture consists of a white blood cell count below 1,000 per cu.mm., of which 90 per cent are lymphocytes and 10 per cent are monocytes[5]. The diagnosis can be confirmed by bone marrow studies.

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The bone marrow is either of a hyperplastic type with an abundance of stem cells—myeloblasts, or of a hypoplastic or almost aplastic type which is practically void of myeloid elements, occasionally there is an abundance of reticulo-endothelial elements, and, rarely, the marrow is normal. The hyperplastic type is mostly seen in persons who succumb to the disease within a few days; the hypoplastic marrow in patients who die after prolonged illness. During improvement there is a progressive maturation of the hematopoietic tissue characterized by the appearance of myelocytes and young leukocytes[6]. Beside the myelogram, the microscopic structure of the lesions of the pharynx and lungs are typical: there is necrosis, exudation of fluid and of fibrin, of a few lymphocytes and monocytes; leukocytes are conspicuously absent.

There is a variety of chemical, physical or bacteriologic causes of acute granulocytopenia. The most common agents are amidopyrine[7],[8], acetphenetidin, phenacetin, empirin compounds, acetanilid, pyramidon[9],[10], dinitrophenol, arsphenamine[10],[11], and other benzene derivatives[12], then barbiturates[7],[10], gold salts[10] and thiouracil[13]. In one instance a few small doses of a drug will produce neutropenia; in other patients granulocytopenia appears suddenly, a long time after large doses of the same drug have been given. None of the chemicals or microorganisms produce neutropenia regularly, and it is obvious that another factor must be involved in the genesis of this disease.

The search for such a factor created many theories. Some authors suggested idiosyncrasy, others sensitization. The stem cell hyperplasia is held proof of a maturation arrest[14]. It is reasoned that there is lack of a nutritional factor[15] which lately is believed to be identical with pyridoxin-vitamin B_6[16].

Up to now, the treatment of acute neutropenia consists of nucleoproteids in the form of pentnucleotides[17], yellow bone marrow, ascorbic acid, vitamin complex, vitamin B_6[16], liver extract, iron, and blood transfusions.

In spite of intensive treatment the mortality of the acutely ill remains high. Although it is still disputable as to whether neutropenia accompanies an acute infection or whether the two conditions are concurrent, the fact remains that the patients die either of septicemia or of broncho-pneumonia. The stoppage of the spread of an existing infection and the prevention of secondary infections should be the goal of our treatment. It should, if our conception proves right, reduce future fatalities from granulocytopenia.

CASE REPORT

A 57 year old, normally developed and nourished, colored man was admitted to the Wilmington General Hospital (service Dr. Sidney Chavin) in a semi-comatose state with a generalized maculo-papular rash, areas of purpura over the entire body, and a hyperpyrexia of 104°.

The family and personal history were essentially negative. Approximately six months before hospitalization the serologic tests for syphilis, performed by the State Laboratory, were positive. The patient had received 10 intravenous injections of 60 mg. doses, or a total of 0.6 gm of arsphenamine.

Four days prior to admission the patient developed high fever, a generalized macular rash, bled from the nose, and vomited. On admission, the patient appeared acutely ill; upon physical examination, however, nothing was seen but signs of multiple generalized hemorrhages.

Laboratory studies revealed repeatedly positive tests for albumin in the urine, red and white blood corpuscles, and coarse granular casts in the urine sediment, and a positive test for occult blood in a stool sample. The blood sugar level equaled 98 mg. per 100 ml., the blood urea nitrogen 15.4 mg. per 100 ml. Agglutination tests for enteric diseases were negative. The seroreactions for syphilis were negative on admission (6-26-45) and again during the patient's stay at the hospital (7-17-45); before his discharge (8-8-45), the Kahn test was negative while the Wassermann reaction turned positive.

The appearance of blood elements in the urine and in the feces indicated internal purpura. The hematologic findings served as a basis for the correct diagnosis. Because of frequent repetition, the results of blood examinations are presented in the form of charts and a graph. To classify the patient's

Dates 1945	Hb* gm.	Red Cells per cu.mm.	White Cells per cu.mm.	B. %	E. %	St %	N. %	Ly %	Mo %	Platelets per cu.mm.
6- 26	10	3,150,000	870	0	0	0	0	90	10	6,300
27	10	3,830,000	780	0	2	1	3	92	2	
30	7½	2,780,000	570	0	0	2	3	95	0	
7- 2	8	3,190,000	510	0	0	3	2	95	0	
5	8	3,330,000	1,500	0	0	7	18	72	3	
8			1,870	0	0	12	24	58	6	
10	8	2,700,000	1,400	0	0	5	23	65	7	
14			4,300	0	0	7	43	45	5	
17	7	2,380,000	6,450	0	2	2	38	50	8	149,900
23	6½	2,310,000	7,250	0	2	2	68	18	10	
25	7	2,530,000								
30	8	2,340,000	10,500	0	5	2	59	31	3	
8- 2	8	2,600,000								
6	9	2,810,000	9,750	4	6	1	51	29	9	
9	9½	3,160,000								
9- 13	12	3,960,000	8,300	2	2	3	64	21	8	

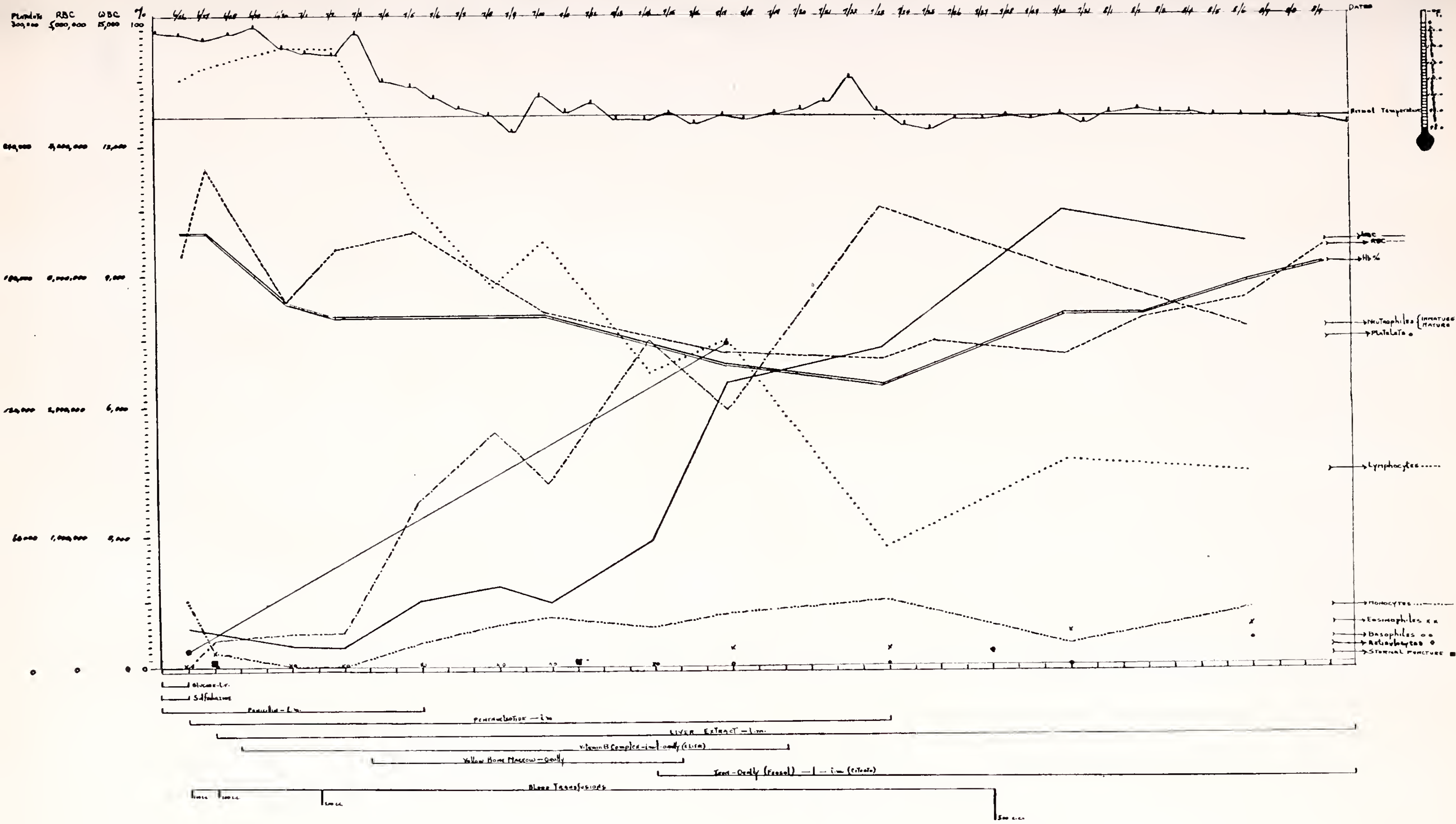
* Hb -hemoglobin, B -basophilic, E -eosinophilic, St -stab cell, N -neutrophilic mature, Ly -lymphocytes, Mo -monocytes.

CHART 1. Peripheric blood findings of a patient with acute neutropenia during hospitalization and a month after discharge.

Dates	6 — 26 — 45			7 — 10 — 45		
Paramyeloblasts	10	14	18	0	28	36
Myeloblasts	1			10		
Premyelocytes	1*			4		
Myelocytes	0			8		
Metamyelocytes	0			2		
Stab cells	2			4		
Polymorphonuclears	4*	4		8	8	
Lymphoblasts	2	68	78	1	47	52
Lymphocytes	66			46		
Plasmatocytoblasts	2	8		0	5	
Plasmatocytes	3			1		
Monocytes	3			4		
Megakaryocytes	1	1		0	0	
Reticulo-endohelial cells	1	1		0	0	
Megaloblasts	3	4	4	4	12	12
Erythroblasts	1			8		
Normoblasts	0			0		
Nucleated cells; total			100			100

* eosinophilic

CHART 2. Myelograms of a patient with acute neutropenia on diagnosis and during recovery.



OUTSTANDING DATA OF BLOOD FINDINGS AND TREATMENT IN A PATIENT WITH ACUTE MALIGNANT GRANULOCYTOPENIA anemia, further blood studies were made (7-25-45). The mean corpuscular volume was 83 cu.mi., the mean corpuscular hemoglobin 28 gamma, the mean corpuscular hemoglobin concentration 33 per cent, the volume index 0.8, and the color index 0.9. In the fragility test initial hemolysis occurred at 0.44 per cent and complete hemolysis at 0.34 per cent of sodium chloride solution; 1.8 per cent of all red corpuscles were reticulocytes.

The patient's progress is clearly illustrated by the charts of peripheric blood findings (Chart 1) and of myelograms (Chart 2) and especially by the graph which includes temperature records and therapeutic procedures.

Although there was no evidence of upper respiratory infection—in which respect our patient was atypical—large doses of penicillin were injected to prevent infection during the period of severe neutropenia. Pentnucleotides, yellow bone marrow, and vitamin B complex were administered because they represent the standard treatment. Because the patient reacted to repeated transfusions with chills, liver and iron were give to ameliorate his anemia.

The patient's temperature began to drop within one week and reached the first normal value on the tenth day just when the first increase of white blood cells (from 510 to 1500 per cu.mm.) and of granulocytes (from 5 to 25 per cent) was noticed. No more penicillin was given thereafter. A definite turning point occured after three weeks with the white count reaching 4,300 cells per cu.mm. and granulocytes numbering 50 per cent of the white cells; the patient left his bed. The yellow bone marrow, vitamins and pentnucleotids were gradually discontinued. At this point, however, the erythrocyte count had decreased, and the liver treatment of anemia, initiated previous to this date, had to be intensified and fortified by a transfusion.

The patient was discharged after 46 days of hospitalization. Frequent controls revealed a steady improvement under anti-anemic treatment. A month after hospitalization (9-13-45) the blood picture stabilized at about a normal level. Physically, the patient is well.

DISCUSSION

The hyperpyrexia of our patient was caused either by hemorrhage into the thermoregulatory center or by acute nephrities. The fact that it subsided under penicillin therapy indicates that there was a hidden infection. At the same time, the administration of penicillin is held imperative to decrease the mortality rate from septicemia of patients with granulocytopenia. It is believed that this treatment saved our patient's life. Regeneration of the bone marrow will frequently occur with the cessation of exposure to chemicals or of the intake of drugs which precipitated the neutropenia. Pentnucleotids, yellow bone marrow, vitamin complex, and probably even pyridoxine, which is believed to be responsible[15] for maturation and migration of the myelogenous elements, are adjuvants to the process of cell formation.

The question whether or not, in our patient, arsphenamine caused the acute neutropenia could only be answered by renewed medication with the same drug. It would be hazardous to do so and to risk another episode of neutropenia for the sake of scientific proof. It is known that granulocytopenia from arsenicals does not show the well-marked bone marrow proliferation of myeloblasts found in instances of idiopathic agranulocytosis with maturation arrest. There are a number of blood dyscrasias which may follow arsphenamine injections: thrombocytopenia; granulocytopenia, a combination of both; or aplastic anemia. Severe depression of myelopoiesis, marked depression of thrombocytopoiesis and of erythropoiesis as well occur mostly after a larger series of injections of arsenicals—as it was in the case of our patient.

SUMMARY

A patient with acute granulocytopenia, most likely precipitated by arsphenamine, was cured by intensive medication. Penicillin played a major role in the patient's cure. The nature and treatment of malignant neutropenia is discussed.

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PENICILLIN TREATMENT OF PNEUMOCOCCIC MENINGITIS

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Introduction

Pneumococcic meningitis is a frequent infection and is often overlooked until convulsions, stupor, marked restlessness, and neck rigidity make their appearance. In infants and young children it often follows pneumonitis or otitis media. Unexplained fever, a bulging fontanel, or nuchal rigidity, which may be difficult to elicit in infants, should always arouse a suspicion and should prompt diagnostic thoracocentesis. A cloudy spinal fluid is evidence enough for the immediate institution of treatment for bacterial meningitis, pending laboratory reports as to the type of micro-organism involved. Good results depend on early therapy.

Numerous single case reports and elaborate statistics established the facts of the beneficial effects of the various sulfonamides and of penicillin on many a disease with a formerly high mortality rate. The presentation of three patients cured of pneumococcic meningitis by the combined use of these drugs would be superfluous should the report not serve as a pretext for a premeditated discussion.

Case 1

A six-year-old girl was apparently well until February 27, 1944. The next day the child did not feel well, complained of left earache, and showed signs of throat infection. On the morning of the following day she was too sick to get out of bed; at about 11 o'clock she became listless and would not answer questions; in the afternoon she developed rigidity of the neck and nystagmus, her eyes turned upward and she became comatose. The only important point in the history was the fact that the child had a moderately severe attack of catarrhal jaundice with liver enlargement which started on the 10th of January, 1944, and lasted for four weeks.

On admission to the hospital the child had all the classical symptoms of meningitis. The organism responsible for the disease was an atypical Pneumococcus seen in chains of up to twenty members. This micro-organism was cultured from the cerebrospinal fluid and the blood as well. The important laboratory findings were charted together with the temperature curve and the therapy (Chart 1—Patient 1).

The patient's temperature became normal on the fourth day of hospitalization but increased again as soon as the dose of sulfamerizine was reduced. The reduction was warranted by the high blood level of the drug. The tenth day the child's neck was still stiff and the Brudzinscki sign positive: the left eardrum was slightly dull, a small patch of urticaria appeared on the left buttocks, and secondary anemia developed. A slight bilateral papilledema suggested partial basilary block caused by fibrinous exudate. During the course of illness sulfamerizine was replaced first by sulfadiazine, on the fifteenth day by sulfapryridine, and on the seventeenth day by sulfathiazole. On the eighteenth day the child's condition became critical, and a request was made for penicillin. Meanwhile, large doses of sulfamerizine were given to the patient. Penicillin was first started on the twentieth day of hospitalization. Next day the temperature began to decrease and remained normal under penicillin therapy. Upon exhaustion of the supply of the drug, the temperature increased again and so did the spinal fluid cell count. A second course of penicillin, which ended on April 4, 1944, resulted in final cure and discharge after forty days of hospitalization.

Case 2

A six-months-old girl was admitted to the hospital January 1, 1945 because of malaise and fever of seven days duration. The child had a fever, vomited, cried constantly, and

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The penicillin was provided for case number one by the Office of Scientific Research and Development from supplies assigned by the Committee on Medical Research for clinical investigations recommended by the Committee on Chemotherapeutic and Other Agents of the National Research Council.

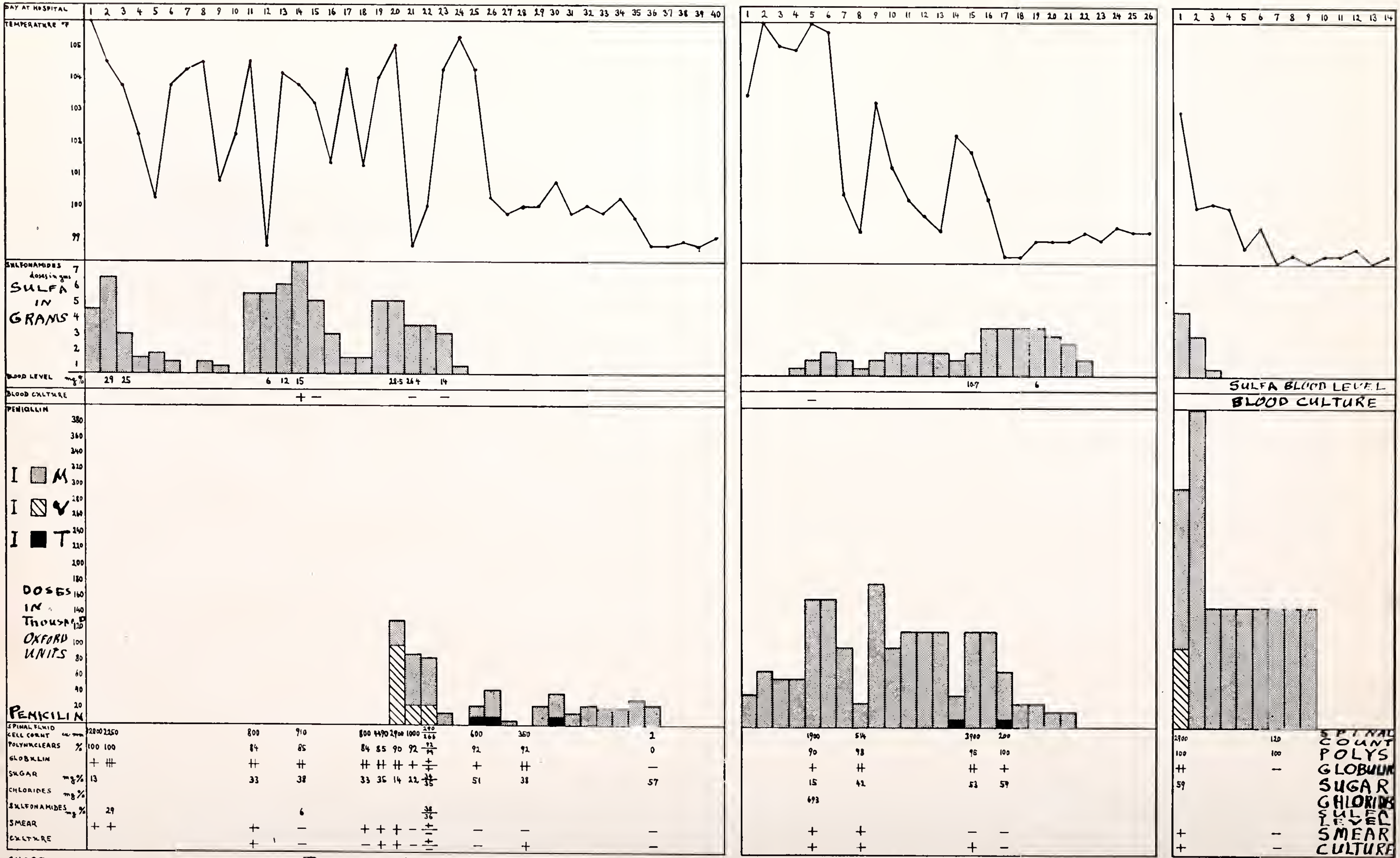
DAY AT HOSPITAL
TEMPERATURE °F
SULFONAMIDES doses in gms
SULFA IN GRAMS
BLOOD LEVEL mg%
BLOOD CULTURE
PENICILLIN
I ▒ M
I ▨ V
I ■ T
DOSES IN THOUSAND OXFORD UNITS
PENICILIN
SPINAL FLUID CELL COUNT cu mm
POLYNUCLEARS %
GLOBULIN
SUGAR mg%
CHLORIDES mg%
SULFONAMIDES mg%
SMEAR
CULTURE
SULFA BLOOD LEVEL
BLOOD CULTURE
SPINAL COUNT
POLYS
GLOBULIN
SUGAR
CHLORIDES
SULFA LEVEL
SMEAR
CULTURE
PATIENT 1
PATIENT 2.
PATIENT 3.

CHART 1.

was restless. She had several generalized tetanic convulsions. The physical examination revealed signs of pneumonitis. A chest x-ray showed increased bronchiovascular markings. There was no evidence of nuchal rigidity or bulging of the anterior fontanel. On the fifth day after admission the anterior fontanel was under increased pressure. The spinal fluid pressure was increased, the fluid itself was cloudy, and a strain of Pneumococcus type XIX was cultured. The blood culture was negative. The laboratory findings' the temperature curve, and the therapy were charted (Chart 1—Patient 2).

Penicillin therapy was started on the first day, the treatment with sulfamerizine on the fourth day of hospitalization. Within eight days the child improved to such an extent that the dosage of both drugs was reduced. The next day, however, the child was worse and large doses had to be given for several days. A second drop in temperature occurred on the thirteenth day. Again, discontinuation of intense medication resulted in a relapse. Sulfamerizine was replaced by sulfadiazine. On the seventeenth day the condition improved greatly, and the dose of both drugs was gradually decreased and finally discontinued after twenty-two days. The child was discharged after twenty-six days of hospitalization.

Case 3

A six-year-old boy was taken to the hospital on November 21, 1945, after a week's illness which began with headeache, earache, fever, and generalized malaise. The child had been treated for an upper respiratory infection, and was apparently improving. The day before hospitalization, however, the boy complained of pain in the neck and severe pain on any attempt at flexion. On admission the child had a temperature of 102.6° and was apparently ill. He complained of headache and neck pain and held his head in extension. There were signs of upper respiratory infection. Otherwise, the physical examination was negative, the reflexes were normal, and there was no evidence of muscle spasm. The spinal fluid pressure was moderate, the fluid was cloudy the cell count high, and the culture revealed a Pneumococcus type III. Again, spinal fluid findings, temperature, and therapy were charted (Chart 1—Patient 3).

Penicillin and sulfadiazine were administered from the first day on. The child's temperature dropped to normal within twenty-four hours and remained normal thereafter. The neck rigidity improved within forty-eight hours so that the child was able to flex his neck forward moderately without any pain. Within seven days he was able to sit up, bend forward freely, and felt very well. At this date the spinal fluid findings showed marked tendency to the normal state. The sulfamerizine treatment was discontinued after three days and the penicillin therapy after nine days. After fourteen days the child was discharged from the hospital. His general condition on January 7, 1946, was normal in every respect.

Analysis of Treatment

The fortunes of the pneumococcic meningitis patient began to improve with the development of chemotherapy. 100% mortality was considerably reduced by the sulfa drugs and by specific antiserum.[1] More substantial improvement was made, however, by the use of penicillin alone, and more so by the combined use of sulfonamides and penicillin.[2] In 1943, Hodes[3] and associates reported their results with sixty patients with pneumococcic meningitis treated with sulfa drugs. The rate of recovery as a whole was 42%; for those over two years of age being 64%, while for those under two years of age it was 22%. The higher mortality was due to delay in instituting treatment. In a review of the literature Hogg and Bradley[4] reported that of twenty-eight instances of pneumococcic meningitis occurring in the first two weeks of life, death occurred in 26 of the infants. The diognosis was made by lumbar puncture in 11 (40%) of the patients during life, and the diagnosis of the remaining seventeen (60%) was made post mortem.

Recurrences in pneumococcic meningitis have been reported when the patients were treated with sulfonamides alone or combined with specific rabbit antiserum. Penicillin has lessened the possibility of recurrence.

Several types of sulfonamides were given to the first child, hoping to obtain a more satisfactory response. The chart indicates the high blood levels obtained. Penicillin was given intravenously (150,000 Oxford units), intramuscularly (420,000 units), and intrathecally (30,000 units). Intravenously, the drug was given in 100,000 units in 500 cc. of physiologic saline at the rate of 100 cc. per hour. Three doses of 10,000 units each were given intrathecally (on March 24, 25, and 26). The intramuscular doses were of 5,000 and 10,000 units each. Iron, thiamine chloride, and ascorbic acid were therapeutic adjuvants. Two blood transfusions of 200 cc. each were given (on March 14 and 21). Intravenous glucose was administered on occasions.

The second child was treated with sulfamerizine, sulfadiazine and penicillin This was given intramuscularly, intraspinally, and intracisternally in doses up to 180,000 units a day. The supportive treatment consisted of parenteral administration of fluids, of 5 per cent glucose, and in blood transfusions through the bone marrow.

The third patient received sulfamerizine, sulfadiazine, and penicillin. The total amount of penicillin given during the disease was 1,750,000 units. It was administered intravenously the first day (100,000 units) and intramuscularly for nine days in doses up to 400,000 units per day. No penicillin was given intrathecally

DISCUSSION

The chief reason for reporting these cases is to emphasize the observation that intrathecal or intracisternal use of penicillin should not be the rule but the exception if at all necessary, in the treatment of pneumococcic meningitis. In the treatment of meningococcic meningitis and of poliomyelitis we have made it a practice to follow the teachings of Hoyne[5] who has insisted for years that intrathecal therapy and multiple spinal punctures are not necessary and in many cases harmful to the patient. Indeed, symptoms of meningitis constitute only a small part of the picture of a violent generalized systemic infection the patient is suffering from, and any attempt to treat the spinal canal locally will surely fail to eradicate the disease. The use of sulfonamides intrathecally, when first introduced, had very unfavorable results.

At the present our practice is characterized by the effort to make the diagnosis clinically. If this cannot be accomplished, a spinal puncture is performed under strict aseptic precautions. In meningococcic meningitis, intrathecal therapy of any kind is never given and a second spinal puncture is not performed. In poliomyelitis a spinal puncture is not done at all if the diagnosis can be established clinically, because spinal punctures have produced unfavorable sequelae and a negative report of the spinal fluid does not exclude poliomyelitis.

In pneumococcic meningitis many authors have been strongly in favor of intrathecal and intracisternal administration of penicillin.[6] We have objected to this form of therapy (see discussion of [6] p. 41) because of its possibility of producing meningeal irritation, secondary infections, and many other complications[7, 8]. Dangerous complications have already been reported.

The ill effects of the intrathecal therapy, which obviously necessitated one or two lumbar punctures daily for seven or more days, were cellulitis, meningitis due to reinfection through the lumbar puncture, blockage of the cranial foramina with resulting hydrocephalus, headache, nausea, and a case of optic atrophy with total blindness in a two-month-old infant following a single injection of 20,000 units of penicillin intrathecally. The author states that this occurrence may bear no relationship to the intrathecal dose of penicillin, but it should give us pause before injecting unnecessarily large amounts of penicillin into the spinal canal.

During the treatment of the first of our patients, the following experiment was made on March 21, 1944: a spinal tap was done and the needle left in situ while 25,000 units of penicillin were injected intravenously. Thirty-five minutes later a second specimen of cerebrospinal fluid was removed. Both specimens of fluid were assayed for penicillin by Dr. James Kakavas, bacteriologist at the University of Delaware. The first sample did not contain any trace of penicillin and gave a culture of Diplococcus pneumoniae, while the second sample contained one-tenth unit of penicillin per cc. and was free of bacteria.

A single experiment of this nature does not allow definite conclusions. It stimulates, however, speculation as to the merits and demerits of intravenous and intrathecal penicillin therapy in patients with meningitis. Another point of interest is also the fact that the penicillin gets into the spinal canal more readily in the presence of meningitis than it does when the meninges are normal.

It is evident from the three cases reported that large initial doses of sulfonamide and penicillin, intravenously with intramuscularly, will give good results. A number of intraspinal treatments may be necessary only in selected patients. This intraspinal medication does not have to be repeated as frequently as previously practiced

In our first child there were twelve spinal taps done; in the second, four; and in the last one, two Apparently the larger dosage of the drugs in the third case were quite effective, so that intrathecal therapy was not necessary Some experience during the past three years resulted in a change of our attitude concerning diagnostic and therapeutic spinal punctures. There is no doubt that unless spinal taps are carefully done there is an element of danger of injury to the intravertebral disc by the needle and also by introducing infection into the spinal canal. Greater danger lies in the possibility of irritation caused to the meninges by the penicillin, since it has been shown repeatedly that the drug acts as an irritant to the blood vessels when given intravenously. Indiscriminate cisternal taps to introduce penicillin into the cranial cavity may result in injury to the medulla by accidental puncture. As a rule, the duty of performing these taps is turned over to hospital interns who early in their career lack the experience necessary to perform punctures with precision. It is a common experience to see a child punctured a number of times before a successful tap is performed. This done each day, or twice a day as suggested by some, would eventually result either in cellulitus or reinfection in the spinal canal.

Summary

Three patients with pneumococcic meningitis were cured with combined penicillin and sulfonamide therapy.

Because of a host of possible complications from multiple spinal taps, emphasis is placed on a minimum number of diagnostic and therapeutic punctures.

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MUTILATION OF THE PENIS

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Incarceration of the penis does not occur very often. Recently, Hoffman and Colby[1] summarized 114 instances in a bibliography covering 190 years. The addition of another report is only warranted by the uncommon outcome: amputation of the glans of the penis.

A three year old white boy was brought to the dispensary by his mother. The child's health has always been good except for "nervousness" which, according to the mother, manifested itself by extreme restlessness in bed. When the child was one year old it would jump in bed for two or three hours every night until sleeping ensued. The boy sleeps with his fourteen year old sister who has long blond hair and who frequently combs her hair in bed. On several occasions the mother has removed long blond hairs which were wrapped around the patient's penis.

Approximately three weeks before admission to the out-patient clinic of the hospital the boy complained of pain at attempts to void. The mother noticed marked swelling of the end of the child's penis. The urinary stream was greatly diminished and occasionally there was only scant dribbling at urination. The mother could find no constricting bands of any type about the penis. She took the boy to a physician who without examination of the boy prescribed frequent warm tub-baths.

About one week prior to the child's admission the mother noticed that the child would splatter urine over his clothing and that the urine came out of both the end of his penis and from the region just behind the glans. The mother noticed for the first time that the end of the penis was black.

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On admission (12-7-45) the glans penis was markedly swollen and black in color. Just beyond the corona there was a constricting band composed of eight to ten fine blond hairs. The penis had been severed completely except for the dorsal portion of the urethra. A probe could be passed from the meatus back to the area where the urethra had been severed. The constricting band was removed and the patient was given cool boric acid soaks. The following day the penis appeared more gangrenous than before and a bleb 1cm. in diameter was present on the left lateral surface of the glans. At this time it was deemed advisable to remove the gangrenous portion of the penis, which was performed by Dr. Lang W. Anderson.

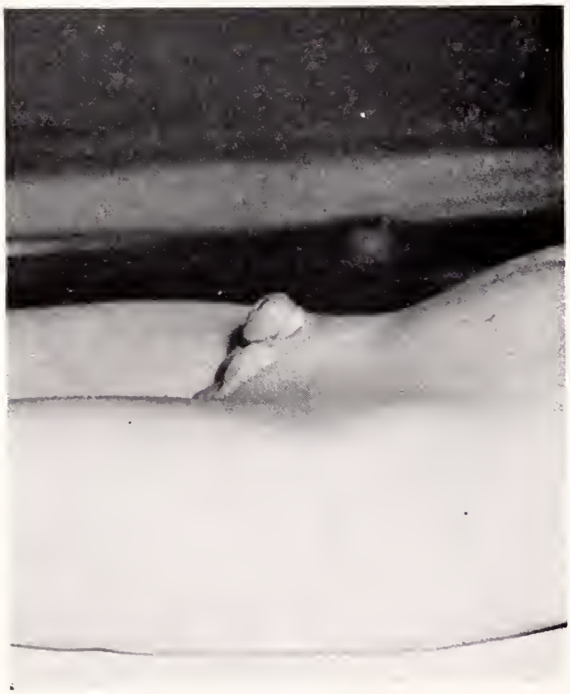

Fig. 1—The appearance of the penis five weeks after removal of the glans penis.

Since this operation the patient has had no difficulty in urinating and has not complained of dysuria. The wound healed well.

In the majority of patients restoration of the organ is possible. In our child, the process advanced to such a state that amputation of the glans was almost completed on admission to the Hospital.

"With infants and children the difficulty results usually from the tying of strings or hairs around the penis by their caretakers in an effort to overcome enuresis."[1] In our patient this does not seem probable; other possibilities have to be considered. The mother does not believe that the boy wrapped the hairs around the penis himself or that the fourteen year old sister or other siblings did so. She attributes the tragic incident to the childs' restlessness in bed. However, the possibility of auto- or hetero-erotic manipulation cannot be excluded with certainty.

REFERENCE

1. Hoffman, H. A., and Colby, F. H.: Incarceration of the Penis, J. Urol. 54: 391, 1945.

DOCTORS AT HOME

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"We have chosen the title *Doctors At Home* as an indication of our gratitude for peace and our thankfulness for the return of our greatly missed and much needed family physicians who, in increasing numbers, are laying aside their uniforms to take up the postwar problems at home.

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W. W. Bauer, M.D.
Director, Bureau of Health Education
American Medical Association

TYPHOID FEVER *

* * * *

Abstract of Case 1.

Dr. Samuel N. Dulin: A 29-year-old colored male was admitted to the hospital complaining of fever and cough. The patient was disoriented and irrational. Although he was being admitted for the first time he stated that he had been in the hospital for the past 60 days. That night he dressed and left the hospital without the knowledge of his attendants. The police found him several blocks away: he stated that he left because the boss gave him the afternoon off. He was not violent at any time and quietly returned to the hospital.

The abnormal findings on physical examination were a frequent cough productive of about one teaspoonful of yellow muco-purulent material, inflammation of the pharynx and tonsils, and numerous coarse, squeaking rales on inspiration and expiration throughout the chest. On admission the temperature was 100°, the pulse 84 and respiration rate 22, and the blood pressure 110/70. The following day the temperature increased to 103.6° and remained elevated thereafter; the pulse rate dropped to 72.

The laboratory findings of interest were a white blood cell count of 5,600; a hemogram of 5% stab cells, 64% mature neutrophiles, 26% lymphocytes, 2% monocytes, and 3% eosinophiles; a strongly positive reaction for albumin in the urine; and a blood urea nitrogen of 50 mg%. A spinal fluid examination was entirely negative. The clinical picture called for further laboratory tests, which led to the diagnosis.

The patient was discharged in good health after a month of hospitalization.

Discussion (Conclusion)

Question: What was the result of the Wassermann test?

Answer: Serologic reactions for syphilis were negative.

Question: What was the result of sputum examination?

Answer: The examination did not render any significant information.

Question: What was the result of the Widal test?

Answer: The agglutination tests were negative a day after admission but became positive in the second week.

Question: What was the result of the blood culture?

Answer. The blood culture led to the correct diagnosis; a pure culture of E. typhosa was obtained.

Abstract of Case 2.

Dr. Samuel N. Dulin: A five-year-old white, Jewish girl was admitted to the hospital complaining of listlessness.

One week prior to admission her mother noticed that the child was less active than usual and that she sat around the house instead of playing. The child did not have any complaints, but her apathy alarmed the mother. Two days before admission, she complained of slight generalized abdominal pain, and vomited four times a few minutes after eating.

Before the present illness the child's health had been good; she never had any contagious diseases. She had been immunized for small pox and pertussis.

On physical examination the only abnormal findings were a muco-purulent discharge, and a tender, palpable spleen. On admission the temperature was 101°, the pulse 130, and the respiration 30. The next day, however, the temperature was 105° and remained elevated.

Laboratory examination revealed a white blood cell count of 10,500, a hemogram with 7% stab cells, 42% mature neutrophiles, 44% lymphocytes, and 7% monocytes. In the urine there was a trace of albumin, and 2 to 5 red blood cells per high-power field. The clinical findings prompted further laboratory tests which led to the diagnosis. The patient was discharged in good health after one month of hospitalization.

Discussion (Conclusion)

Question: Is this another case of typhoid and, if so, how has the diagnosis been established?

Answer: It is another case of typhoid fever, and the diagnosis was again reached by blood culture. At the same time the Widal test was already positive. Stool cul-

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* From the Wilmington General Hospital staff meeting, November 12, 1945.

tures were strongly positive from the third week on in both patients, while urine cultures remained negative.

Question: Was the diazo reaction positive?

Answer: No, the diazo reaction and the urochromogen test as well were negative in both patients. However, these tests may not have been properly timed.

Question: Did the patients have the odor characteristic of typhoid fever?

Answer: No. However, the art of diagnosis by such features as smell of certain diseases has been largely lost due to the infrequency of such diseases. One of the patients was a colored man, and the odor is supposedly less distinct in the Negro race.

Question: Was there a typical roseola?

Answer: No, in neither of the two patients were there any skin manifestations.

Clinico-Pathologic Discussion

Dr. O. J. Pollak: There is hardly a disease more extensively discussed in textbooks than typhoid fever. There is, however, hardly a disease with more deviations from the classical picture.

The prodromal symptoms of headache, backache, fatigue and step by step ascending temperature may be absent. The onset, which is mostly slow, might be sudden and accompanied by delirium, as in our first patient. The bradycardia is not absolute but only relative in comparison with the increase in temperature. It is not always established and especially frequently absent in children, as was the case in our second patient. Infantile and senile typhoid fever may present moderate signs and symptoms; in the aged patient splenomegaly may be absent. The roseola, which in the majority of patients is localized, may be generalized in abortive forms. The dry coated tongue with free edges may or may not be present. Constipation is just as frequent as the usually over-emphasized diarrhea. The meteorism is not characteristic; the "abdominal" facial expression only if paired with a slow pulse. Ambulatory forms of typhoid fever do not have a characteristic temperature curve. Leukopenia and lymphocytosis are the most constant features of the disease. The absence of eosinophilic cells is held characteristic for typhoid fever, but eosinophiles may be present in patients infected with parasites. The diazo and urochromogen reactions are of no value when negative and only of limited value when positive. Widal's agglutination test may be positive due to previous illness or vaccination. It remains negative in the asthenic form of typhoid, to turn positive during convalescency.

The number of diseases from which one has to differentiate typhoid fever is great. The differential diagnosis must be based on correlation of the clinical features with a host of laboratory tests. The importance of blood cultures, which in both our patients led to the diagnosis, must be emphasized.

The variety of complications encountered in typhoid fever is very large and so is the number of post-typhoid states. Relapse, recurrence, autoinfection and reinfection play an important role. Carriers of typhoid microbes may turn into excretors of the microorganisms and endanger other people.

Epidemiologic Discussion

Dr. A. Parker Hitchens: There are various epidemiologic aspects to typhoid fever. On the part of the medical profession the prompt reporting of any new instance of the disease to the Health Department is most important. On the part of the public and the law-maker the constant improvement of the water supply, the prohibition of the sale of raw milk, and the extermination of flies must be stressed. The Health Department's function is the tracing of infection to its source, and the finding and control of carriers.

Some progress has been made in the search for carriers by the discovery and use of a third antigen of the typhoid bacteria. Beside the somatic O-Antigen and the flagellar H-Antigen there is a Vi-(virulent) Antigen which indicates the presence of live microorganisms. Agglutination tests in convalescence and in persons suspected to be typhoid carriers should be done with all three antigens, and the agglutination with the Vi strain should serve as a screening test. Such tests should be made obligatory for food handlers and the related professions.

The investigation of the two presented patients led to discovery of the source of infection in the child. The child's grandmother had been declared a typhoid carrier fifteen years ago, and her stool culture was positive for E. typhosa at the same time our patient was at the hospital with typhoid fever. The old lady is known to have infected one son, two daughters, and two granddaughters with the same disease during these years. A number of typhoid carriers remain undetected. It is, however, equally regrettable if a known carrier spreads the disease.

HAIL AND FAREWELL

On this, the third anniversary of the beginning of the DELAWARE CHRONICLE, we must remind you that when the first issue came off the press, letters poured in asking that this little brain-child be fostered, nourished, and sustained. We then made the promise to keep it alive for the duration of the war. That period of our history is now over—in its more marked phases. A goodly number of the men and women, members in former days of the Delaware Hospital Staff, are returning. We are happy to see them. A number are still in National Service, many of them still helping to make our motto true—"We Cover the Earth." Those who are still away have been moved about so rapidly that our address list is essentially obsolete, so, reluctantly, we must say—farewell. It has been a lot of fun to keep this publication going, but more satisfying were your letters of commendation, praise, and requests for more. Your letters were unanimous in expressing the thought that the CHRONICLE, was a great little morale builder to those far from home. We heard very few criticisms, and those few were constructive. Your letters were newsy, informative, and interesting. Honors at home came our way. The Delaware State Medical Journal and the public press gave approving nods. The State of Delaware requested a complete file to be placed in the State Archives—"as an example of what was done for people of Delaware in National Service." To you who were, and to those who still are in Service, as well as to those of us who remained at home, we hope that our feeble attempts at humor left no one offended—it was all in fun. To our friends at home who helped make this venture possible—those who wrote articles for publication, to our many purchasers at "one thin dime per copy" and contributors who made this paper possible financially, to the Record Room Staff for their aid in mimeographing—to these go our deepest thanks.

And so with this issue we come to the parting of the ways—on this third birthday of the CHRONICLE, at this Christmas time, at this joyful time of the year, we sorrowfully pull our cloak about us and say to all our friends—

HAIL AND FAREWELL

E. A. U.

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The dangers of toxic reactions to the kidneys and crystal formation in the urine, frequently seen when sulfathiazole or sulfadiazine is administered, has been greatly reduced by the application of a recently discovered phenomenon that the total toxic and crystallizing properties of a combination of two sulfonamides would be no greater than the toxic and crystallizing properties of one of them in the combination.

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BACKGROUND OF S-1050*

Speaking of the background of the 1945 version of the Wagner-Murray-Dingell bill, Mr. George P. Farrell, Director of the Bureau of Medical Care Insurance, Medical Society of the State of New York, had this to say:

"Most of us think the bill is a product of the social reformers of this country. However, the bill is revealed as a product of the International Labor Organization. The interlocking of national with international groups interested in social reform (including socialized medicine) had its start at the Arbitration Court of the Hague in 1899. It received official status as a private agency in Basel, Switzerland, in 1919. Under Part XIII, of the Versailles Treaty, it achieved official status as a subsidiary of the League of Nations. It moved its headquarters from Geneva, Switzerland, to Montreal at the beginning of World War II; it maintains a branch office in Washington, D. C. The original founders were the International Association for Labor Legislation and its various national affiliates. Other international organizations interlocking directorates lent needed assistance and among these was the international Association for Social Security which openly advocated the socialization of all human endeavor.

"When did this country become involved in it? In 1919 the U.S. Senate specifically withheld the assent of the United States from Part XIII of the Versailles Treaty. Samuel Gompers, President of the American Federation of Labor, had withdrawn from the American Association for Labor Legislation and denounced it as un-American. Despite senatorial skepticism about International Labor Organization's aims, however, the first officially approved International Labor Conference was held in Washington in December that same year. In 1934, through an unheralded joint resolution, passed by Congress, the United States became a member of the International Labor Organization and accepted the International Labor Organization's constitution.

"What is its purpose? It states its purpose as being "to promote social justice in all the countries of the world." To this end it collects facts about labor and social conditions, formulates international standards, and supervises their national application. In seeking to supervise the national application of International Labor Organization standards, the International Organization is obviously more than a mere fact-finding group."

The International Labor office acts as a secretariat, an information center, and a publishing house. It is staffed by experts drawn from many different countries whose knowledge, experience, and advice are available to all the nations which are members of the organization. For medical care planning there are at least three Americans among this group of experts: Chairman of the Social Security Board, Director of the Social Security Board's Bureau of Research and Statistics, and its assistant director. None of them are physicians.

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* The revised bill is S-1606.

In 1943 and 1944 the International Labor Organization put finishing touches on one hundred fourteen proposals for the "improvement and unification of medical care services." Many of these are embodied in the Wagner-Murray-Dingell Bill . . . .

Too few physicians, we think, are sufficiently detached from the overwhelming burden of the day's work and evening meetings to interest themselves in research into world-wide movements which are now affecting the status of the medical profession both here and abroad. It is the function of editorial staffs to collate available material bearing on this subject and to present it in as abbreviated form as possible in the hope that it will be noted and used in forming judgments and attitudes toward currently proposed changes in status of the profession. We are possibly too much occupied with details and thereby miss the significance of the forces at work at the national and international levels. Some of these forces have their roots in the revolt of the masses of the people against poverty, insecurity, and political tyranny, against bad working conditions, discrimination exploitation, neglect, against disease as a cause of personal suffering and as an economic hazard. Revolt against any of these conditions, which are common to all peoples in greater or less degree, has constantly occurred in the past but in a somewhat localized, restricted sense. However, with the recent increase in industrialization of many nations, hastened in some cases by war revolt has become simultaneous and additive. The resultant stresses no longer involve isolated plants or communities but now whole industries, the political life of nations, and the destiny of all peoples of the earth.

Medicine, touching all phases of human endeavor, all human life at one time or another, must necessarily be part of this revolt. More and more the irresistible tide will touch and affect the professional and economic life of each physician. The Congress and the people of the nation have thrown in their lot with the United Nations Organization and the establishment of a workable world government already is beginning to emerge. To say that this trend in world affairs and our participation in it will leave the practice of medicine here or anywhere unchanged would be to ignore the prime role which medical science must play in the postwar world. Starvation, systematic and deliberate wreckage of the health of millions of all nationalities will seriously affect the economy of many nations for generations to come.

We are fortunate in the United States to have escaped the catastrophe that has been visited upon Europe and many other parts of the world. Here there is time for considered, carefully planned change in methods for better distribution of medical care, for the creation of a demand for voluntary sickness insurance and the satisfaction of that demand, for higher quality medical service for war veterans, for more and better hospital facilities. There is no reason why a rapid, ill-considered change in types of medical service *here* should be advocated by anyone.

We can appreciate that in Europe, in Great Britain, in the Orient the urgency of necessity may be the governing factor in provoking more rapid procedures, more violent reaction to intolerable living conditions. In our own situation there seems to be little excuse for blindly plunging into government-controlled medical practice. On the contrary, there exists every opportunity and facility in this nation for intelligent experimentation with and evolutionary development of a wide variety of medical service suited to the temperament and economy of the people.

Editorial, *N. Y. S. J. M.*, Feb. 15, 1946.

Prize Contest

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation announces that the annual prize contest will be conducted again this year. For information address Dr. Jas. R. Bloss, Secretary, 418 11th Street, Huntington 1, W. Va.

BOOK REVIEWS

General and Plastic Surgery: with Emphasis on War Injuries. By J. Eastman Sheehan, M. D., Professor of Plastic Reparative Surgery, New York Polyclinic Medical School. Pp. 345, with 496 illustrations. Cloth. Price, $6.75. New York: Paul B. Hoeber, Incorporated, 1945.

This is a comparatively small book, the sixteen chapters being short. As would be expected, the major space is devoted to plastic surgery. This is not a textbook of general or plastic surgery, in the generally accepted sense, but in both fields represents the points of special interest or value that have impressed the author, and while it is not intended to be voluminous, it is in fact full of information that would require extensive reading in many books to duplicate. The illustrations are definitely helpful. The emphasis throughout is on war wounds, but the techniques apply equally well to civilian conditions. It is the author's hope that the lessons learned on the battlefield will be remembered in civilian practice. His book will do much to bring this about—we heartily recommend it.

Diseases of the Nose, Throat and Ear. Edited by Chevalier Jackson, M. D., and Chevalier L. Jackson, M. D., Honorary Professor, and Professor of Broncho-Esophagology, respectively, Temple University. With the collaboration of 64 outstanding authorities. Pp. 844, with 934 illustrations on 581 figures, including 18 plates in color. Cloth. Price, $10.00. Philadelphia: W. B. Saunders Company, 1945.

This book presents the various phases of modern otorhinolaryngology and bronchoesophagology in a form most practical for those interested in these specialties. The collaborators are all thoroughly acquainted with their respective subjects.

The articles on aviation otolaryngology and chemotherapy in otolaryngology are well prepared and of particular interest to the specialist.

The chapters on modern functional hearing tests and those on the audiometer and the fitting of hearing aids have been brought up to date and will be of especial interest to the modern otologist. Parts four and five, which include the larynx, trachea, and bronchi, have been prepared especially by the two Jacksons, and are interesting reading, and the diseases and treatment of these organs have been brought up to date. They include a number of illustrations, eighteen of which, are in full color reproduction.

This book should be well received by both students and specialists in ear, nose and throat diseases.

Men Without Guns. Text by De Witt Mackenzie, War Analyst of the Associated Press; Descriptive Captions by Major Clarence Worden, Medical Department, U. S. Army; Foreword by Major General Norman T. Kirk, Surgeon General, U. S. Army. Pp. 152, with 177 drawings, including 118 plates in full color. Cloth. Price, $5.00. Philadelphia: Blakiston Company, 1945.

This book records the great work of the Army Medical Corps in the war. It is an authentic story of the men who fought without guns to save human life, the story of the services of our doctors, nurses, and enlisted men on the battlefields and in the hospitals of Europe and Asia. Mackenzie, whose graphic recital of the story behind the pictures in the book will hold the reader's attention from beginning to end, was a war correspondent in World War I and, as Associated Press War Analyst during World War II, covered the African, European, Burma, China and Pacific fronts, where he saw the Army Medical Corps in action. A dozen famous American artists braved the hardships and perils of war to make the notable series of historical paintings reproduced from the Abbott Collection of Paintings, now the property of the U. S. Government. The book constitutes an authentic and valuable contemporary history of Army Medicine in the war and a priceless and archival treasure.

The Care of the Aged (Geriatrics). By Malford W. Thewlis, M. D., Attending Specialist, U. S. P. H. Hospitals, New York City. Fifth edition. Pp. 500, with 65 illustrations. Cloth. Price, $8.00. St. Louis: C. V. Mosby Company, 1946.

The new edition of Thewlis' popular book includes much additional recent material, twelve new sections appearing for the first time, all stressing preventive geriatrics. There is also considerable rearrangement, alterations increasing the value of the book. Treatment is given the space and importance it deserves. Geriatrics is now a recognized specialty, and we consider Thewlis' book the best in this newest specialty.

Howell's Textbook of Physiology: Edited by John F. Fulton, M. D., Sterling Professor of

Physiology, Yale University School of Medicine. Fifteenth edition. Pp. 1304, with 507 illustrations. Cloth. Price, $8.00. Philadelphia: W. B. Saunders Company, 1946.

After a lapse of six years but of less than one year after Dr. Howell's death appears the fifteenth edition of America's first textbook of physiology. Many new chapters appear and several others have been rewritten in order that the text shall include the results of the very latest researches. Dr. Howell himself, almost 85 years of age, took the keenest interest in this last edition of his renowned opus. The 24 contributors have evolved a text of uniformly pleasing style, though our feeling is that it falls a bit short of the eloquence of the old maestro. Our further feeling is that this new Howell is still America's greatest textbook of physiology.

Mitchell-Nelson. Textbook of Pediatrics. Edited by Waldo E. Nelson, M. D., Professor of Pediatrics, Temple University School of Medicine, with the collaboration of forty-nine contributors. Fourth edition. Pp. 1350, with 519 illustrations on 333 figures, in color. Cloth. Price $10.00. Philadelphia: W. B. Saunders Company, 1945.

As the editor states, "This textbook of pediatrics is the successor to the Griffith and Mitchell text and as such represents the fourth edition of the single volume series, each of the first two editions having been published in two volumes." It will be recalled by those who knew them that the death of Dr. Griffith occurred one month after that of Dr. Mitchell, in 1941. Dr. Nelson had been closely associated with Dr. Mitchell in Cincinnati.

Dr. Nelson further states in his preface: "This book has been completely rewritten and to all intents and purposes it is a 'new' book. There is some alteration in the general arrangement, a number of new sections have been added, and some of the sections of the last editions have been completely discarded. In an attempt to bring together in a single volume the representative thought on the various problems of pediatrics we have asked specially qualified persons to prepare material for a great part of the book."

This book is very comprehensive. It dwells upon practically every phase of clinical pediatrics in proportion to its importance. The reader is given a good perspective of the pediatric problem.

The illustrations and figures are excellent. The whole set-up of the book is very commendable, and this includes the size of type, the quality of paper used, and the binding. Flexibility permits the pages of the book to remain flat at whatever point it is opened.

This book is outstanding in its field and should be in the hands of every student and practitioner of pediatrics.

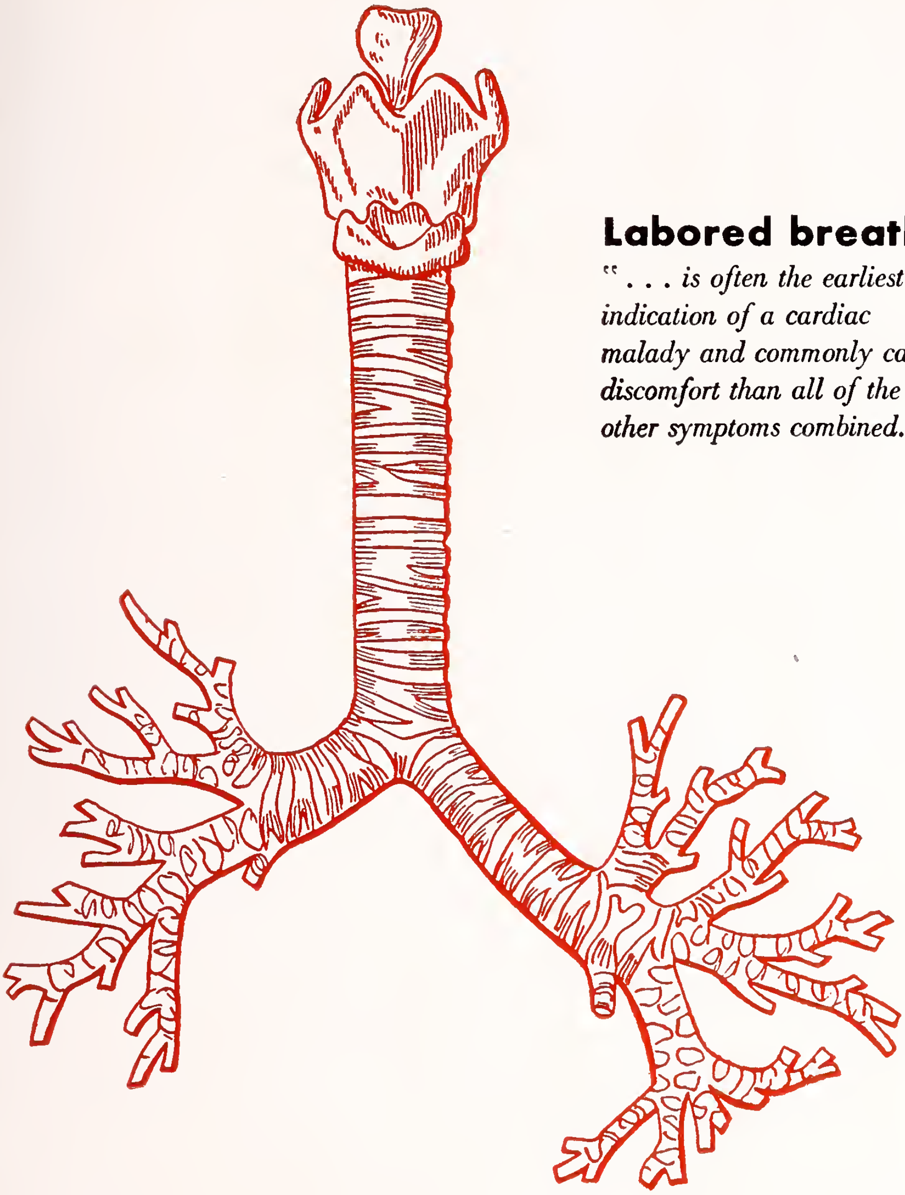
American Red Cross First Aid Textbook. Revised edition of 1945. Pp. 254, with 264 illustrations. Price: Paper, 60 cents; cloth, $1.00. Philadelphia: Blakiston Company, 1945.

Everybody knows of these A. R. C. First Aid books—they have appeared ever since 1909 and many millions of copies of previous editions have been used throughout the United States.

The present edition is an entirely new book prepared according to a wholly different plan. The chapters are reduced from fourteen to twelve and rearranged; the illustrations increased from 114 to 264; the style has grown in dignity and simplicity; and the scientific accuracy reaches a new maximum. This is the best A. R. C. First Aid Textbook that we have seen. This book represents a consensus of the leading surgeons and other specialists in the United States concerned with problems of first aid. The appropriate committees of the Division of Medical Sciences of the National Research Council participated in the work.

The Romance of Human Architecture. By Maurice Chideckel, M. D. Pp. 107. Cloth. Price, $2.00. Boston: Bruce Humphries, Incorporated, 1945.

This little book is an anatomy and physiology for the laiety. Written in a style much superior to that found in most such books, the information is accurately and concisely imparted. There are no illustrations, for which we are grateful: the illustrations usually poured into similar books are generally ghastly things that detract from and cheapen the book. Also there is no index, which is to be regretted, for the layman may have considerable difficulty in finding a particular paragraph by looking over the table of contents. Even so, for its purpose, the book can be recommended.



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1. Harrison, T. R.: Cardiac Dyspnea, Western J. Surg., 52:407 (Oct.) 1944.

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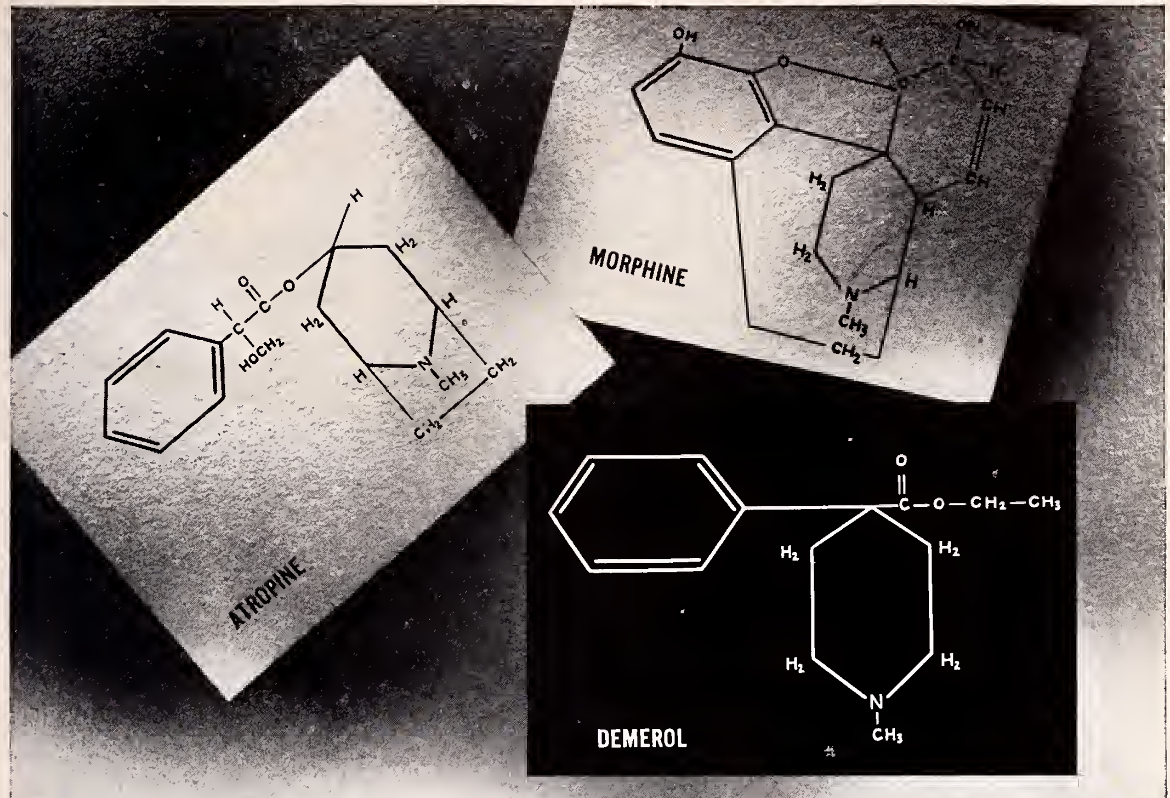

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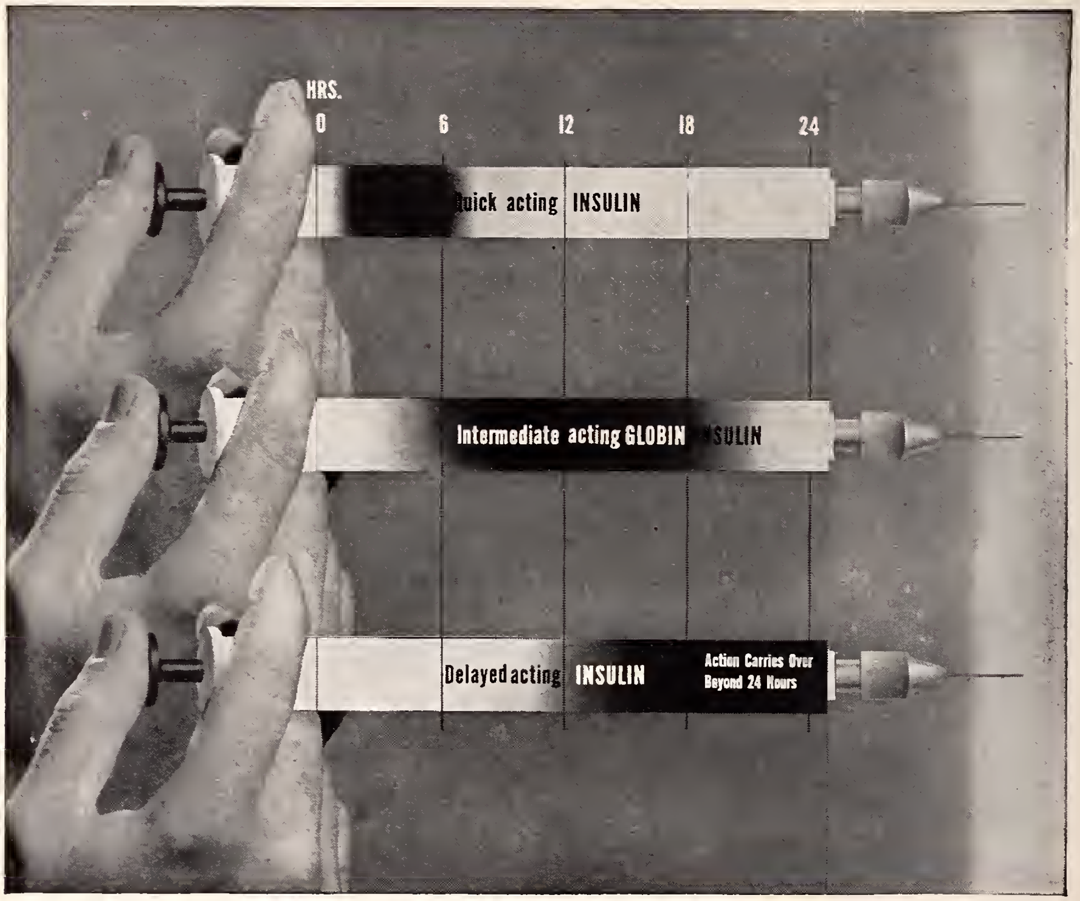

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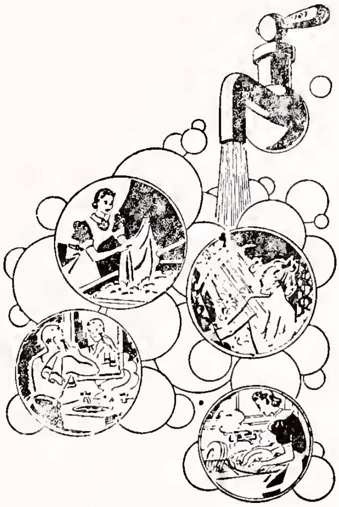

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*Frazer, J. G.: The Golden Bough, vol. 1, New York, Macmillan & Co., 1923

DELAWARE STATE MEDICAL JOURNAL

THE N. Y. ACADEMY OF MEDICINE
APR 10 1946

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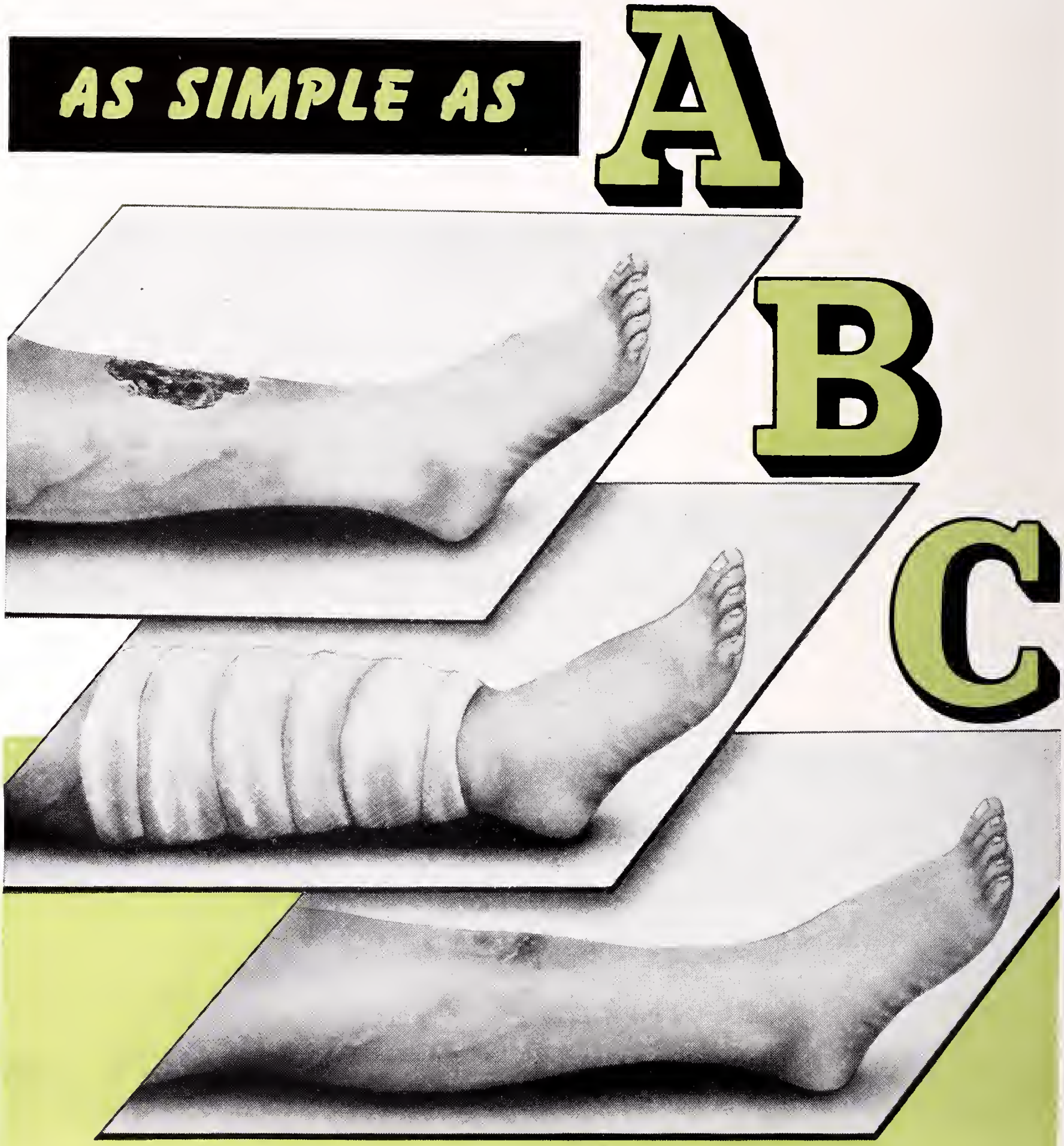

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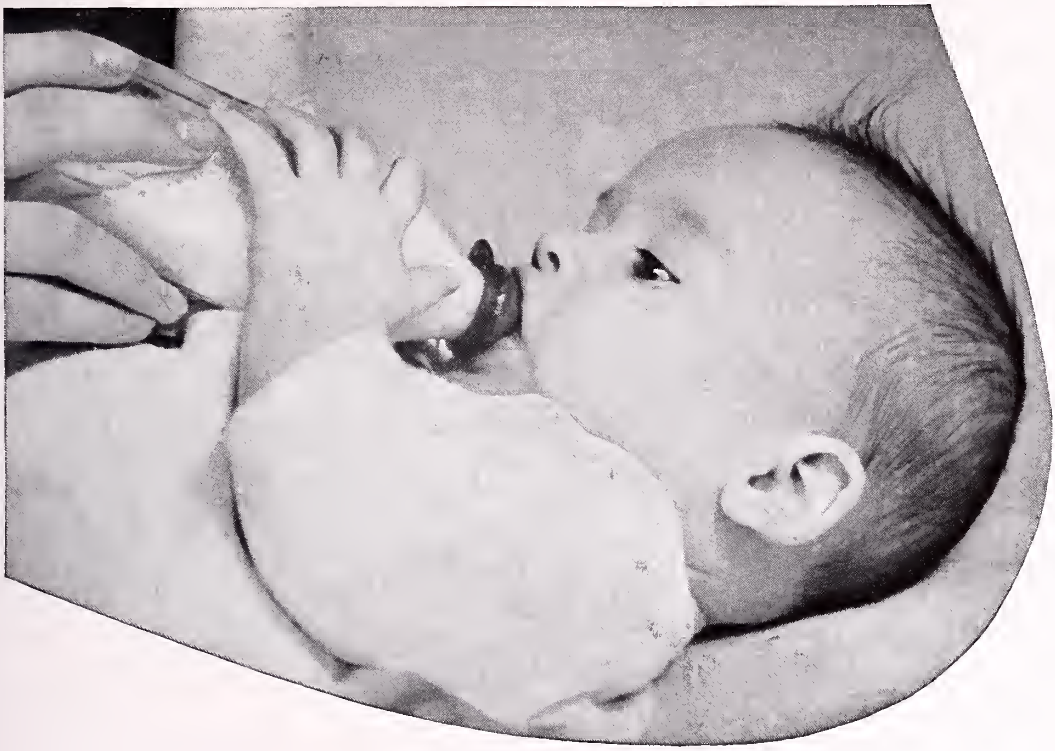

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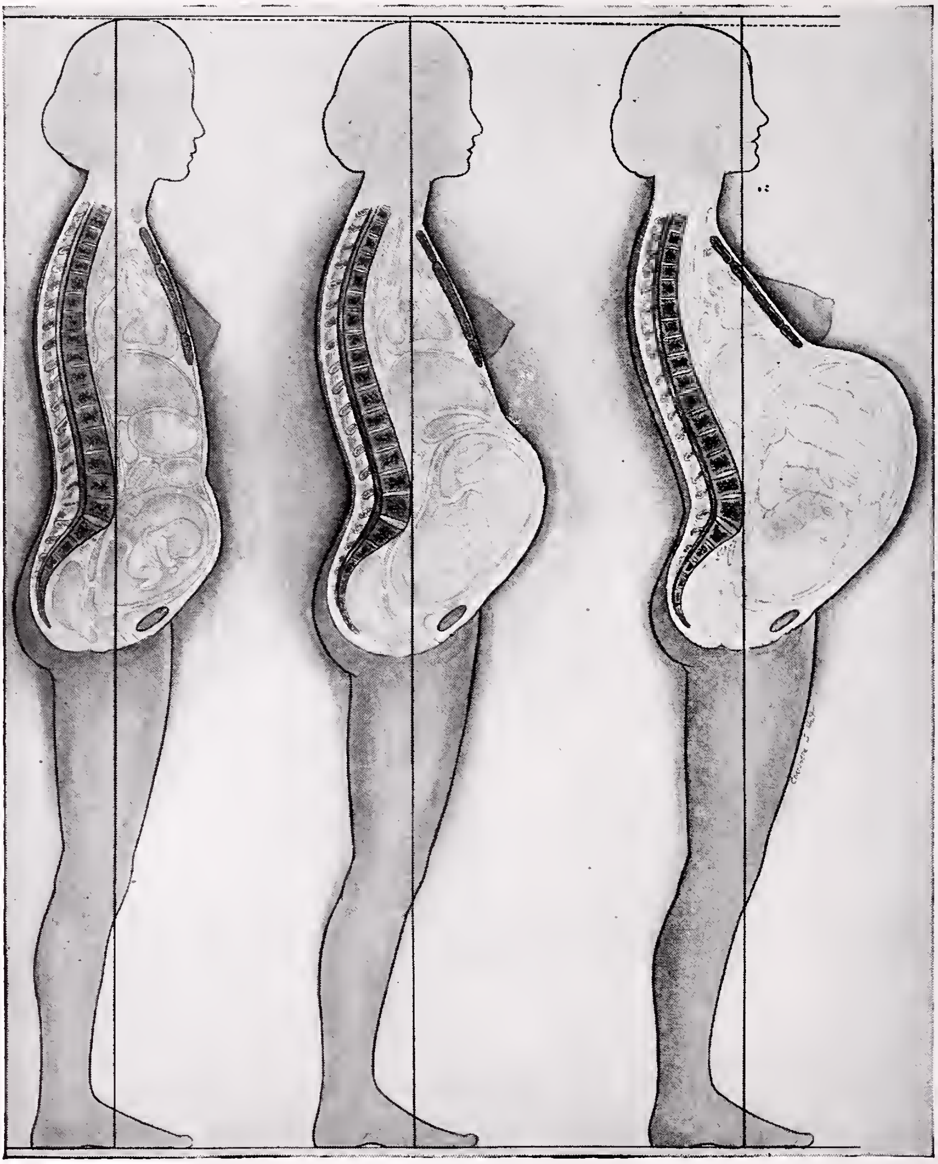
BODY MECHANICS OF PREGNANCY

• STUDIES FROM LIFE MODELS DURING PREGNANCY • Illustration by Charlotte S. Holt



The postural changes during pregnancy are due to the compensatory backward shift of the center of gravity caused by forward pull of the load of the pregnant uterus.

Note the retracted shoulders, carriage of head (pride of pregnancy), and the accentuation of the natural lumbar lordosis which relieves abnormal tension on back and leg muscles.

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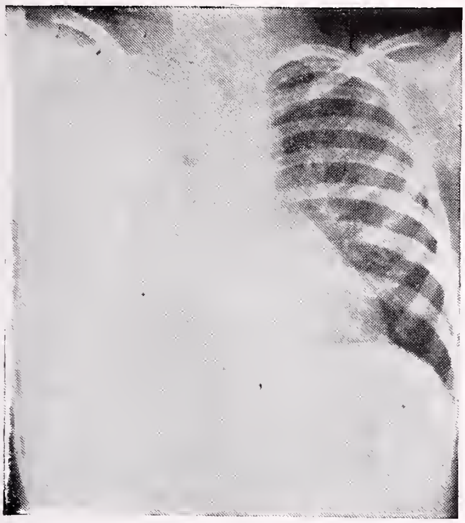
Penicillin in Empyema



1. Right lobar pneumonia (type 1) and right empyema.

Size of cavity, type of infection, and number of organisms determine the amount of penicillin to be administered in empyema. Usually 50,000 or 100,000 units in normal physiologic saline solution are injected once or twice daily directly into the empyema cavity after aspiration of pus or fluid. (Keefer, C. S., et al.: New Dosage Forms of Penicillin, J.A.M.A. 128:1161 [Aug. 18] 1945.) Treatment is by instillation, rather than irrigation, because penicillin requires at least 6 to 8 hours of contact for maximum effect.

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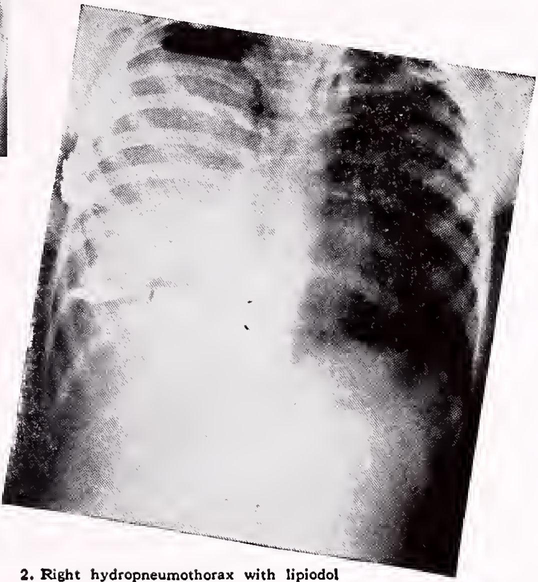
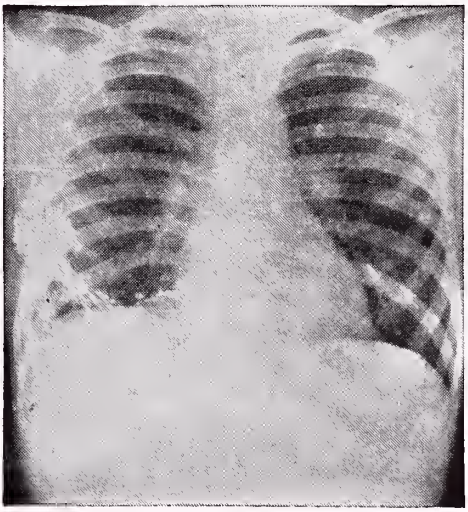


2. Right hydropneumothorax with lipiodol injections showing interlobar empyema.

3. After injecting Penicillin in saline into empyema cavity daily for five days.



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*Davis, C. H.: Gonorrheal Arthritis Complicating Pregnancy Treated with Penicillin, Am. J. Obst. & Gynec. 50:215 (Aug.) 1945.

Hudson, G. S., and Rucker, M. P.: Gas Bacillus Infection of the Uterus Treated with Penicillin, Am. J. Obst. and Gynec. 50:452 (Oct.) 1945.

Woltz, J. H. E., and Zintel, H. A.: The Transmission of Penicillin to Amniotic Fluid and Fetal Blood in the Human, Am. J. Obst. & Gynec. 50:338 (Sept.) 1945.

Mitchell, R. McN., and Kaminester, S.: Penicillin; Case Report of a Patient Who Recovered from Puerperal Sepsis Hemolytic Streptococcic Septicemia, Am. J. Surg. 63:136 (Jan.) 1944.

White, R. A.: Puerperal Sepsis Treated with Penicillin, Southern M. J. 37:524 (Sept.) 1944.

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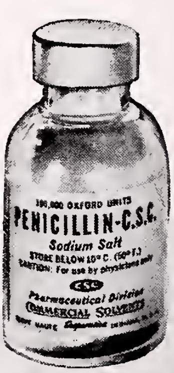

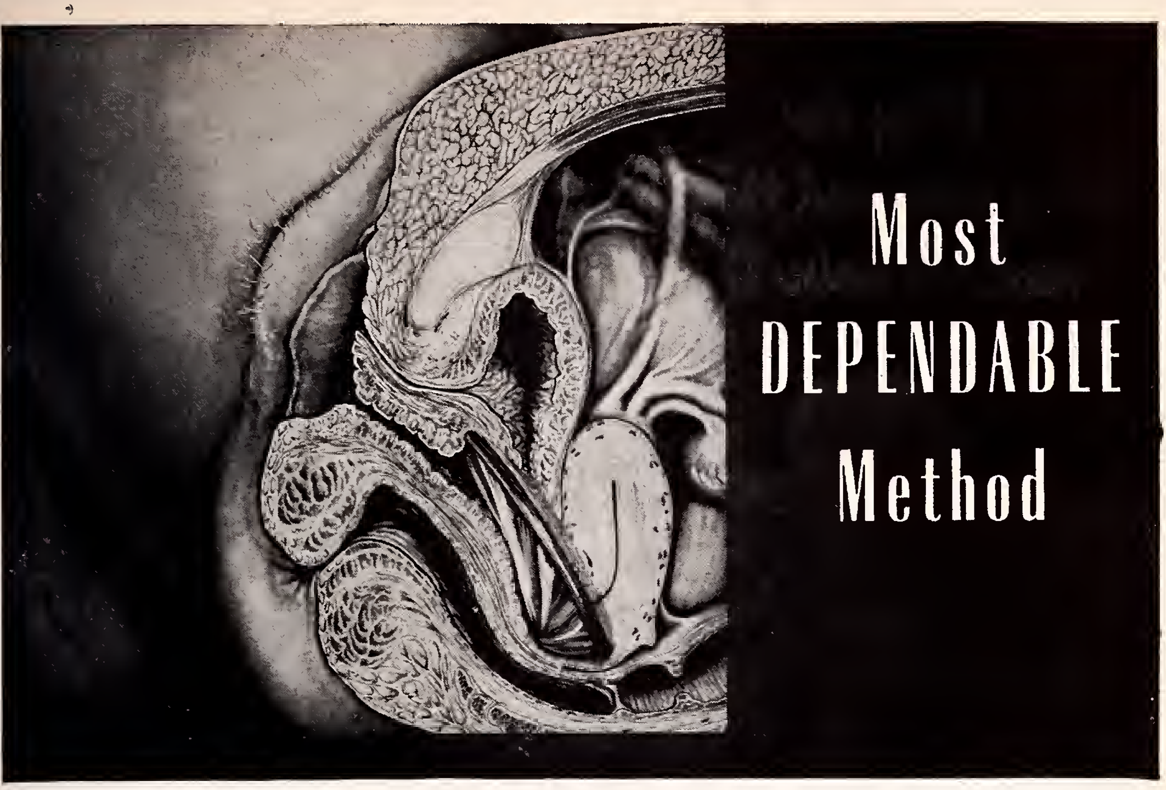

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1. Dickinson, R. L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
2. Eastman, N. J., and Scott, A. B.: Human Fertility 9:33 (June) 1944.
3. Warner, M. P.: J. A. M. A. 115:279 (July 27) 1940.

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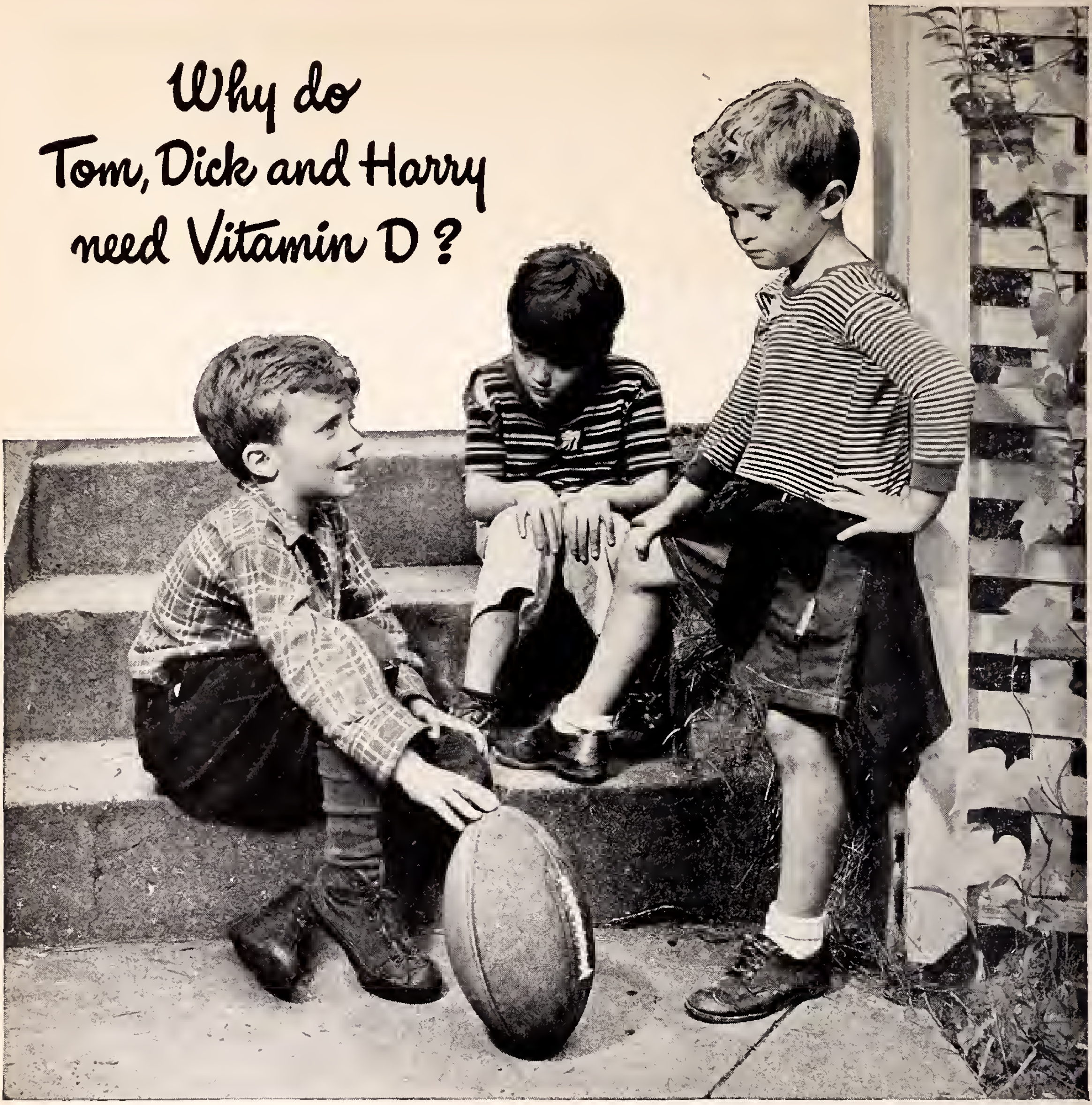

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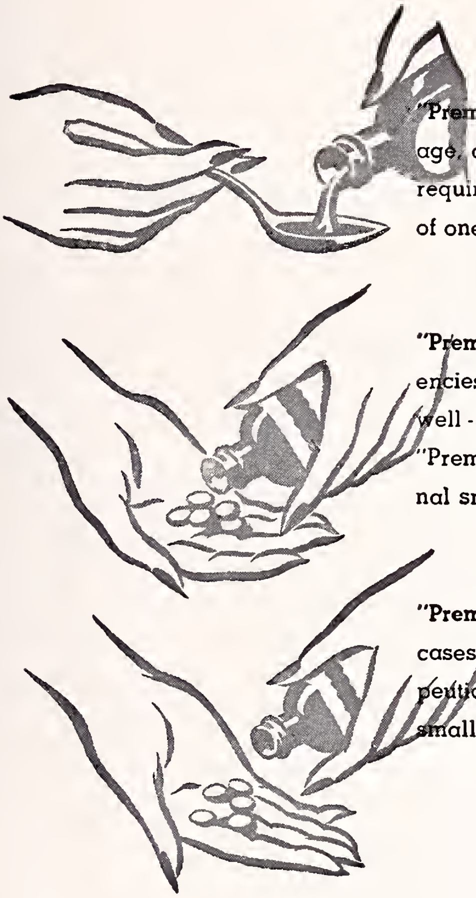

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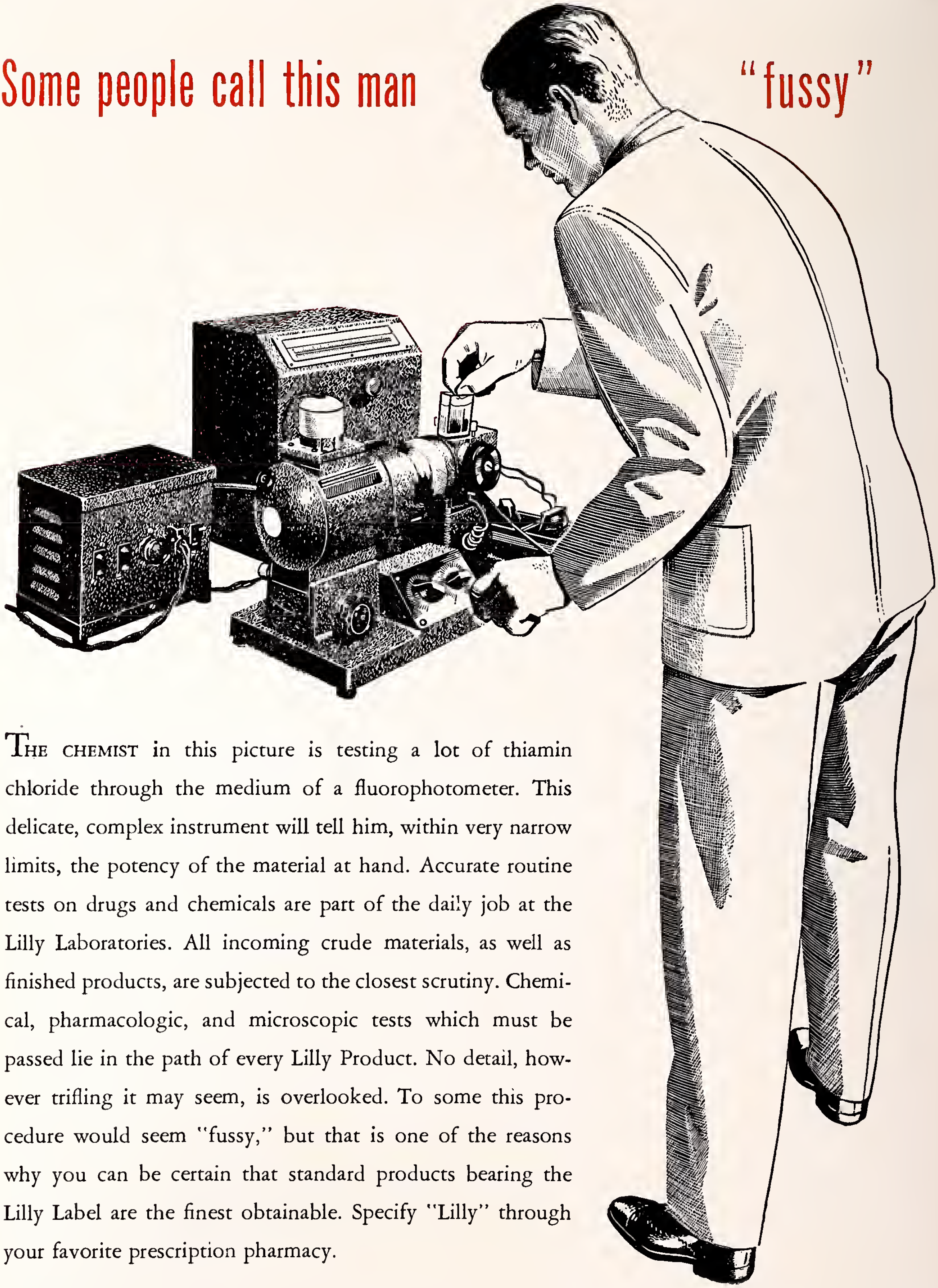

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EARLY DETERMINATION OF GALL BLADDER DISEASE AND ITS TREATMENT*

WILLIAM BATES, M. D., and D. C. EMENHISER, M. D.,**
Philadelphia, Pa.

It has been estimated that about sixty per cent of people who consult an M. D. do so because of indigestion, and that twenty per cent of cases with indigestion as the chief complaint have gall bladder disease.

It occurs three times as frequently among women as among men and the most commonly accepted as predisposing factors are typhoid fever and pregnancies.

When such figures as 75% of women operated upon for gall bladder disease are women who have borne children are quoted, it seems that the same could be said of all adult diseases, but certainly the stasis and cholesterol disturbance during pregnancy probably do play a part. As to typhoid fever, the connection has been proven many times by the recovery of typhoid bacilli from gall stones, but I believe that many of our infectious diseases are also irritating factors in the pathology.

As to age incidence, we frequently tend to place it after forty. This was partly because of the saying attributed to the late Dr. John B. Deaver "Fair, fat and forty, and belches gas"—was supposed to be pathognomonic of gall stones. It is true that most cases do manifest trouble after forty, yet gall stones have been reported as early as seven years of age. In our experince we have seen them under twenty years of age, and quite young cases of troublesome digestive symptoms where we felt the gall bladder was at fault. Today, the "bilious child" formerly treated with calomel and now given milk of magnesia is probably the forerunner of our adult case with numerous small stones.

As to race, a curious about-face has occurred in reference to gall bladder disease in the colored race. As students we were taught that gall bladder disease did not occur among the colored. We were not long out of school before we found this teaching quite falacious. If the figures are taken in proportion to the ratio of population, the figures are only slightly less in the colored race.

The criteria for diagnosis of cholecystic disease for which operation is required include:

1. A satisfactory account of one or more attacks of biliary colic or its equivalent, with or without fever, chills or jaundice.
2. Residual tenderness in the region of the gall bladder following such painful episodes.
3. Flatulent indigestion with distress after full meals, especially of fatty or coarse foods.
4. Cholecystographic evidence of a nonfunctioning gall bladder or the presence of stones.
5. Reasonably exact exclusion of conditions that stimulate cholecystitis.

The classical symptom of cholecystitis with or without stones, is, as we all know, biliary colic. This is characterized by an unusually severe pain, originating in the upper right quadrant of the abdomen and extending to the right subscapular region. On occasion, however, it may occur in the epigastrium, the upper left quadrant, or it may originate in the back and simulate lumbago. Belching, nausea, and vomiting usually accompany the pain, along with chills, fever, and leukocytosis. Icterus following an attack is particularly significant of the presence of stones. Also the residual tenderness, soreness and slight fever are indicative of a genuine gall bladder attack. The modes of obtaining relief are worth mentioning, as morphine is usually the only drug capable of relieving the pain in an attack of colic of any severity.

The dyspepsia associated with cholecystic disease is usually described as gaseous indigestion, with distension and belching particularly noticeable after a full meal, especially when fats and roughage are eaten.

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* Read before the Medical Society of Delaware, Wilmington, October 9, 1945.

** Dr. Bates, Professor of Surgery, Graduate School of Medicine, University of Pennsylvania. Dr. Emenhiser, Resident in Surgery, Graduate Hospital, University of Pennsylvania.

CLASSIFICATION OF CHOLECYSTIC DISEASE

The commonest and most severe forms of cholecystitis are those which are associated with stones, stones being present in the gall bladder in from 90-95% of all acute cases. The symptoms of acute cholecystitis with stones are as a rule much more severe than in the non-calculus form, and may come on much more suddenly. This is true even in the absence of few or all symptoms of previous cholecystic disease. It is here that the attack is likely to be much more typical, with severe upper right quadrant pain and tenderness, muscular rigidity, vomiting, abdominal distension, chills and fever.

Other less common forms of cholecystic disease are:

1. Acute catarrhal cholecystitis. The clinical picture of this type is quite variable. The condition may be very mild and pass unrecognized. If recognized clinically, the onset is usually gradual, with some nausea, chills, slight fever, along with gradual increase of upper right quadrant pain and tenderness. The attacks usually subside with resolution and recovery. Jaundice may or may not be present, depending on the extent of involvement of the biliary tract.

2. Acute infectious cholecystitis, probably hematogenous in origin, is a rather rare condition, but much more severe in symptoms than to the catarrhal type. The incidence of perforation is much higher in this type, and carries a much higher mortality.

3. Acute septicemic cholecystitis, a rare condition occasionally associated with subacute bacterial endocarditis, osteomyelitis, etc., in which the clinical picture is that of an acute fulminating cholecystitis with the wall of the gall bladder containing definite areas of infarction.

4. Acute typhoidal cholecystitis, occurring during the course of typhoid, is generally characterized by superimposing the symptoms of a gall bladder attack on top of the picture of typhoid. Perforation and suppuration are particularly likely to occur in these cases. A similar condition has also been described in connection with pneumonia, cholera, scarlet fever, erysipelas, and variola.

5. Puerperal forms of cholecystitis are fairly common, and may be catarrhal, suppurative, hydrops, or even gangrene and perforation. This condition, is usually one superimposed on pre-existing stones in the gall bladder.

6. Gangrenous cholecystitis is a condition usually associated with a blocking of the cystic duct by stone, with a superimposed highly virulent organism.

7. Chronic non-calculous cholecystitis. A form which produces a great variety of less severe symptoms and which is much more difficult to describe and diagnose. Cholecystograph usually shows some positive findings but nothing as conclusive as in the other forms.

The stasis gall bladder belongs in this group and is defined as an anatomically normal organ which physiologically so functions that it produces dyspepsia, colic, and other symptoms of cholecystic disease.

8. T. B., syphilis, actinomycosis, parasitic infection of the gall bladder—all of these are very rare.

9. Tumors of the gall bladder.

(a) Papillomas—present in 8-10% of all surgically removed gall bladders, usually small, and not of much importance.

(b) Primary carcinoma. Generally associated with stones, but occurs in less than 1% of all cases of diseased gall bladders. The clinical picture is extremely variable, usually not diagnosed except at operation or autopsy. The prognosis is very poor, the patient usually dying within a year, even with early surgical removal.

In making the differential diagnosis of gall bladder disease, the history is of much more importance than any physical findings. Of course, if an x-ray study has been made, or an abdominal operation has been done and gall stones found, it is more positive than history.

In the history, the character, situation and severity of acute attacks of pain, the sequelae of any such attacks, and the complaint of flatulent dyspepsia are most suggestive. Though patients frequently deny previous gall bladder attacks, they readily remember previous bouts of acute indigestion or gastric neuralgia, so diagnosed by the then attending physician. Tenderness, protective rigidity, and fever are early symptoms. Violent vomiting, severe pain directed across the upper abdomen, dark urine, light stools, and puritis identify the attacks as involving the common bile duct before true clinical jaundice may be noted.

In the acute stage of gall bladder disease, and in the presence of increasing jaundice, the cholecystographic study should not be requested. When the dye study is done, we have never been satisfied with either single or double oral dose in the final diagnosis of non-functioning gall bladder. Repeating with intravenous dye too frequently reveals a well functioning organ.

A report of poorly functioning or non-functioning gall bladder, or the presence of shadow indicating stone or stones is almost positive proof of cholecystic disease. On the other hand, a negative report does not rule out disease. We all know that not all gall stones are opaque to x-ray, and that a gall bladder may still give a good functioning x-ray result yet be diseased to the point of giving rise to biliary colic.

During the last decade cholecystography has become an exceedingly reliable aid in the diagnosis of cholecystic disease. Statistics compiled at the Mayo Clinic show that from 90-95% of cholecystographic diagnoses, whether positive or negative, are correct. Of these patients whose cholecystograms are abnormal, more than 98% have disease of the gall bladder. Of those patients who have gall stones, about 99% yield positive cholecystographic data. On the negative side, however, about 10% of those cases with a normal cholecystogram have a diseased gall bladder.

As our clinical experience increases, we realize that laboratory findings that support our clinical diagnosis are a satisfaction, but if they do not support such diagnosis it does not necesarily mean that the clinical diagnosis is wrong.

Acute gall bladder disease with its pain, nausea and vomiting must be differentiated from renal colic. Not too infrequently a flat plate will show the presence of both types of stones. Pancreatic calculi have confused the picture, but not as frequently as kidney stone.

Any thing giving rise to acute pylorospasm such as ulcer and polyp must be considered.

In cases of long standing symptoms, the x-ray differential should include gastric ulcer, duodenal ulcer, gastric polyp, gastric carcinoma, and the possibility of pyelonephritis must be considered. Recently a case was reported that only on third admission to a hospital was the trouble found to be kidney instead of gall bladder. Two negative cholecystograms and exploratory operation were done before the true diagnosis was made.

Concerning the differential, between gall bladder and carcinoma, it is rather appalling to analyze the number of cases previously operated upon where the real offender has been an adjacent carcinoma. In carcinoma of the cecum, most patients have had a recent appendectomy; in carcinoma of the splenic flexure, a previous operation on the stomach is recorded; in carcinoma of the sigmoid and rectum, most of them have had a hemorrhoid operation within a year, while carcinoma of the hepatic flexure cases frequently show comparatively recent cholecystectomy.

Acute cholecystitis is frequently diagnosed in such cases as hiatal hernias, acute mediastinitis, esophageal rupture and, spontaneous pneumothorax.

Coronary masquerades, where anginal attacks are frequently ascribed to acute indigestion or an acute gall bladder attack, are frequent enough for all of us to be on the alert.

Parenchymal diseases of the liver, abdominal crises of tabes dorsalis, and lead poisoning must likewise be eliminated by history, physical examination, or laboratory studies.

In other cases hemolytic icterus, gastro-intestinal allergy, and lesions of the appendix and cecum may prove quite confusing.

If one were satisfied to make a simple diagnosis of acute surgical abdomen and do the differential under palpation and direct vision, time might be saved in some few instances, but we are certain the incidence of error would certainly be greater.

The greatest percentage of operative failures in all types of surgery occurs where the operation is performed for relief of pain rather than the correction of proven disturbances in physiology. The longer the abdominal pain lasts the more likely the operative procedure may be a failure, for in over fifty per cent of cases where the pain lasts over three months the pain is in the abdominal wall and not in the intra-abdominal viscera.

We still have the argument as to the value of early surgical intervention in gall bladder disease. The advocates of early intervention are correct, provided they can operate within the first six to twenty-four hours of an attack. If later than that the amount of edema complicates exposure, and surgical procedures lead to incomplete measures and secondary operations.

Early diagnosis of disease of the gall bladder is most desirable as shown by mortality and morbidity tables. It has been shown that gall bladder operations performed after one or two attacks carry a mortality of 3. to 3.5%; after 4 or 5 attacks, 6.7%; while those with jaundice have a 10 to 11% mortality.

The incidence of perforation of the gall bladder, acute suppurative cholecystitis, empyema of the gall bladder, and common duct obstruction are all much higher in patients with long standing history of cholecystic disease and repeated attacks of biliary colic.

Several years ago it was reported that the mortality rate in gall bladder disease was not proportionate to age, physical condition, number of attacks, or any one of many factors, but was directly proportionate to the number of hours which had elapsed from the onset of the acute attack until hospitalization. The big difference that occurs between home and hospital treatment, is the ability to control intake in the hospital much better than at home.

If the patient arrives 6 to 24 hours after beginning of an attack consideration may be given to immediate operation. If the diagnosis has yet to be proven or if more time has elapsed it is preferable to have the acute attack subside before considering surgery.

The first step in the treatment is to put an absolute stop to everything by mouth. This means that intravenous therapy should be almost continuous, consisting of glucose, some form of Vitamin K, and preferably mixed vitamins. Only in cases of severe wasting do we add amino acids.

Sedation and possibly heat over the gall bladder may add to patient's comfort. If the temperature shows a tendency to fall and tenderness subside, in three or four days the patient is usually ready for a check up by x-ray and reexamination of blood chemistry.

If the temperature does not subside promptly, or increases with increased pain and tenderness, one must consider the possibility of perforation of the gall bladder, with its resulting peritonitis and increased threat to life. Perforation is reputed to occur in 15% of cases, but fortunately the omentum prepares to plug the perforation by surrounding the diseased gall bladder even before perforation occurs. The difference in these two situations of course dictates a difference in the surgical treatment.

In the subsiding case, a time can be elected for exposure and deliberate surgery, usually the removal of the gall bladder, exploration of the common duct, peritonealization of the gall bladder bed and exploration of the abdomen, with possible appendectomy.

In the type which progresses in spite of putting the pylorus at absolute rest, the surgery becomes an emergency procedure, calling for drainage of the gall bladder, removal of the cystic duct obstruction or common duct obstruction, drainage, and out. The sequence of events after this type of surgery varies greatly, from absolute cure to the patient needing one or more operations before normalcy is reestablished. The commonest complication is persistence of biliary fistula which invariably means that there is still a stone in the ampulla or in the cystic duct. Of course this refers to those cases without jaundice.

This complication is caused by the edema present at the time of drainage being sufficient to prevent the recognition of the stone. It is that same edema which necessitates drainage rather than removal.

There is one curious complication of gall bladder disease that must be borne in mind, even though it is comparatively rare. This is intestinal obstruction due to gall stone. This occurs at any age, from 31 to 76 in the ten cases reported from Mayo Clinic. In their cases five had no symptoms prior to the onset of ileus. Three had a characteristic gall bladder history, two had only vague complaints, five had suffered from attacks of partial obstruction prior to onset of actual ileus. In each case the stone had migrated through a cholecystenteric fistula—nine into the duodenum, one into the hepatic flexure. In none of the cases was their diagnosis made before operation. The stone was found in seven cases at operation, and in three cases the obstructing lesion was not found until autopsy was performed.

In contrast to the enormous amount of clinical work done in the Mayo Clinic, our own experience has been unusual, for we have had five such cases. In three cases the diagnosis was made prior to operation, two of these being definitely proven preoperatively by x-ray. The stone was removed in all five cases, but death resulted in two. In one fatal case the stone had lodged in the terminal ileum, about 12 cm. from the ileocecal valve, and the intervening bowel was gangrenous. In the other fatal case the stone was near the junction of the jejunum and ileum. Five days had elapsed from the time of onset of symptoms and patient died within eight hours of operation of an acute pulmonary edema. In four of these five cases the stone was in the last five inches of the ileum. In none of our cases of intestinal obstruction that have been autopsied has a gall stone been found at autopsy, as far as we know.

The usual procedure here is to move the stone back from its lodged position, apply clamps above and below, remove the stone and drain the distended bowel through a catheter brought out through a stab wound, well away from the operative incision.

We have limited our remarks to the presentation to the early diagnosis of gall bladder disease and have not attempted to discuss the diagnosis of early gall bladder disease. This is the realm of the internist and the gastroenterologist. As surgeons we are interested only in presenting the picture as the general practitioner sees it, and when he must decide between medical management and surgery.

2029 *Pine Street.*

DISCUSSION

DR. WILLIAM SPEER (Wilmington): What has been your experience, doctor, with acute pancreatitis following a long continued gall bladder history?

DR. BATES: Either because I do not recognize acute pancreatitis or because it does not happen to be sent into our hospital, I have seen, I think, less acute pancreatitis than anybody doing the same amount of work that I happen to be doing—in fact only two cases. Both cases were of real, severe acute pancreatitis, amounting almost to gangrene. We put in multiple drainage with scarifications. Both cases provided a long neglected gall bladder history, and I think there is a very definite relationship, because it is secondary to blockage of the pancreatic duct from the original pancreatic disease, but I have only the two cases to back my assertion.

DR. SPEER: The reason I asked is that within the last six weeks I was called to see a patient whom I had seen in definite gall bladder attacks for the last 15 years. She always refused hospitalization; she refused everything, because as soon as the pain was gone she was well. About six weeks ago, she was taken one night with another attack of what she thought was just her chronic gall bladder pain. They did not bother me at night; but called me in the morning. I could not get there at once, and when I finally got there one of the kids in the neighborhood said that the lady had been taken to the hospital. I went over to the hospital and the intern had made the same diagnosis—acute gall bladder—and given her morphine. She was calm and collected. I said to the husband: "Here is where we are going to keep her and study her, and get rid of her gall bladder condition," to which he agreed, and to which she agreed. I saw her that night, again. The nurse said she was comfortable and asleep; that it was not necessary to disturb her. I didn't. Next day I called in the morning; they said she was just about the same. I told them to take a flat plate of the abdomen, and in the afternoon I went to the x-ray laboratory, Dr. Lattomus said: "Well, I don't know as we can give you much help, as there is no visible evidence of calculi." While she was in the x-ray department she had an apparent typical gall bladder spasm. When I saw her I found she was in shock, and instituted treatment for a shock. Dr. Edgar Miller saw her with me at eight o'clock. She was still in shock, so we treated her for a couple of hours, trying to get her in better shape, with no result. At ten o'clock I operated. I never had thought of acute pancreatitis, because I had

had the picture of gall bladder for fifteen years. Dr. Miller thought perhaps she might have a ruptured ulcer, but when scrubbing up I said: "I can't see an ulcer picture or a gall bladder picture." It never occurred to me the woman might have an acute pancreatitits, until that time. The moment I opened the abdomen I got the characteristic fluid, and the diagnosis was evident. She had a pancreatitis, undoubtedly, which was the result of a long continued gall bladder disease.

It is the only one that I have seen for several years. Dr. Jones said that he had one the other night. I think there is no question but that this case was a direct result of a chronic gall bladder condition.

Dr. Howard S. Riggin (Seaford): There are sections in the United States known as the "goitre belt." Well, I think Sussex county is the "gall bladder belt."

I had the Tuberculosis Pavilion years ago, and in those days forced feeding and rest was about the only thing we knew about Tb. That meant six or eight or ten raw eggs, in milk, a day. Well, you never saw so many bilious people in your life, and we had to stop all that.

Whether or not the people down in Sussex have classified me as a "gall bladder fanatic" I don't know, but so many of the women patients in the county get the same treatment and were told the same thing that maybe I do get more of the gall bladder cases. But, really, I have seen more gall bladder cases in Sussex county in the last six years than I saw in my last fifteen years in New York City.

But what I wanted straightened out is—I have a diet I put them on. As to things that hurt these cases, I have listed eggs, coffee, fat, of course, chocolate, raw onions, raw apples and salt fish. This, of course, is only from my own observation.

And another thing I checked on, not for many years, but maybe fifteen years—I noticed numerous gall bladder conditions developing in comparatively young people who have had their tonsils out. Now, has that anything to do with the infection that might go down and infect the gall bladder, or is it just my imagination? And is the fact that I have ruled against eggs—I have taken everybody off eggs that had any indigestion—is that just my imagination? I firmly believe people can handle roast beef better than eggs, yet the first thing they give you in convalescence is fresh eggs. Has this diet any significance or is it just merely my imagination?

As to the tonsils, I can't say that I have checked that long enough, but I have checked it enough to know that I have had cases where in six or eight years following a tonsilectomy, they definitely had a gall bladder condition.

Dr. W. Edwin Bird (Wilmington): As to the diagnosis of pancreatic disease, and especially as to the differention between that and a gall bladder condition, I learned in my internship days that acute pancreatitis gives, frequently, a girdle sensation. I have seen this borne out several times, clinically. If you can rule out spinal cord disease this girdle sensation is almost pathognomonic of the pancreas. If a woman complains of a sensation as though there were a corset string around her waist, examine her neurologically to rule out disease of the spinal cord, and if you can do that, it's a pretty good bet you are dealing with a pancreatitis, or with a pancreatic cyst.

Dr. Bates: Speaking of the "belt"—the thyroid or gall bladder belt—I do not know that there is anything in the bacteriology of a certain belt giving rise to conditions such as the water giving rise to thyroid disease: I think it is more the dietary habits of the district or the person. That is borne out by the fact that most of the largest clinics started as thyroid clinics. When they started the Lahey Clinic in Boston people felt it couldn't help but be a failure there, because people in Boston didn't have thyroid disease, but they have made out pretty well there. And in a district where eggs are a prominent part of the diet, and the poultry and meat have been denied them on account of the war conditions, I think there is no doubt that there has been an increase in gall bladder disease, or of precipitating gall bladder disease. I agree with what the doctor said about meat eating, if, of course, you leave out the beef, because there is fat attached to beef, so I will go along with the doctor on everything except the beef.

PROBLEMS OF REHABILITATION IN PATIENTS WITH CEREBRAL PALSY*

Temple Fay, M. D.,**
Philadelphia, Pa.

Rehabilitation may be defined as "the restoration of one's health and efficiency." Strictly speaking, therefore, it would apply only to those who once enjoyed full health and seek again to regain it. The term, however, has been extended to include those handicapped individuals suffering from congenital and post-natal afflictions which require development and training toward a more normal response level.

Plans for rehabilitation and training not only depend on the degree and extent of the physical handicap, but to a large degree upon the mental qualities that remain and are capable of social and educational adaptation.

The first step is one of classification of the patient. The clinition will have little difficulty in separating the cerebral palsy patient from the polio case. It is not, however, always an easy matter to separate the "cerebral palsy" patient from the "high spinal spastic." The former may have much mental difficulty, with spastic diplegia—the latter great spasticity, but an active mind.

As the symptoms of cerebral palsy vary from mild weakness and an increase in reflex activity and muscle tone to severe paralysis with contraction and contracture, the diagnostic difficulties are numerous.

Cerebral palsy is more difficult to define because the term has come to include almost all types of congenital and acquired dysfunction of the motor system that can be ascribed to the brain. Although it is generally applied to the infant or child, the same manifestations of paralysis and spasticity arise in the adult after certain well known vascular lesions.

Many cerebral palsy clinics have sprung up over the country to cope with the problems which the spastic, the athetoid, and the bulbo-ataxic patients present. It is estimated that approximately 22,000 of these individuals live in the state of Pennsylvania, and that there are more than 300,000 scattered throughout the United States.

The most familiar instance of this condition is the spastic child with scissor gait, known as Little's Disease. Here the legs and feet are usually more involved than the upper extremities and the child tends to walk on the toes, crossing the legs due to adductor spasm. The hands and arms are often affected and spastic, so that they are drawn tightly up against the chest. This type may or may not manifest delayed or defective speech. As this is a cortical type of involvement, usually at the vertex, there may be other brain areas involved so that mental retardation and defective development are common.

The next readily recognizable type is the spastic athetoid. Here the motor pathways have been involved, perhaps in the mid-brain at the striatal level, so that great disturbance of co-ordination exists and the patient has difficulty in movement because of altered tone as well as power. These are the types that twist and squirm in trying to perform simple acts. Speech may be explosive and drooling is common.

The patient's plight is so altered from the normal manifestations of movement or even paralysis, that he becomes an object of pity rather than close study. The appearance of drooling has been associated with childish idiots and imbeciles, so that this group suffer not only from the physical handicaps, but also from social isolation. Most of these patients have fairly good understanding and intelligence, and thus suffer more from an unjust and misunderstood mode of treatment offered to them.

The athetoid types usually have excellent memory and musical possibilities. We have rehabilitated those who have speech and intellectual defects and cannot enter conventional school courses because of their physically grotesque appearance by teaching them music such as organ work and trap drums.

I have two young men who have learned to play the organ well enough to take over the duties in church, where they are well cared for and understood by the parishioners and have given great satisfaction to their parish. Another has done "solo" work on the trap drums in a night club, receiving, I am told, $12.00 a night. His family take him to the club and call for him in a taxi. The net earnings of this otherwise dependent member of the family exceeds a brother who has a good

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*Read before the Medical Society of Delaware, Wilmington, October 9, 1945.

** Director of the Neuro-Physical Rehabilitation Clinic position in a shipyard. The boy's athetoid movements are partly screened by palms and some of the "antics" are enjoyed by the patrons as being high class jazz performance.

Another child with extensive frontal lobe involvement I have carried through nine years of musical implantations in order to get speech and certain necessary activities that his original mental level could not anticipate. The boy is now able to compose, transpose, and enlarge on any musical theme he hears. He cannot read and scarcely write. The spastic paralysis of the hands makes conventional piano music impossible, but somehow the fingers of both hands combine to bring forth rich and fine music in new and pleasing combinations. Without this accomplishment, the child would be thought to be a spastic idiot. Rehabilitation of this type requires careful and long term planning. There is much work and thought needed in this field of medicine today.

The mixed spastic ataxic type that occurs with lesions of the brain at the level of the bulb and cerebellum is best exemplified by the symptoms of Friedreich's ataxia. Here, like the first group mentioned above, the cerebral diplegias, correction and retraining has been left to the orthopedic surgeon, the physiotherapist, and occasionally some suggestion or help has been added from the neurological point of view.

Perhaps the most important group of all and the one that offers the most promise of mental and physical rehabilitation is what we have chosen to call the *high spinal spastic*. These patients have invariably been included in the cerebral palsy group because of the spastic arms and legs simulating the cortical type. They are, however, quite distinct and are due for the most part to injury, pressure, or inflammation of the cervical cord and medulla at the level of the juncture between the skull and atlas. Many birth injuries occur at this level and are not detected. The head is twisted off the spinal column in the mechanism of pulling and rotating the infants head at birth. Forceps traction may be very harmful in this respect. More and more neuropathological lesions with high sounding names are appearing under various diagnoses where careful x-ray and neurological examination show the lesion to be an anterior displacement of the atlas, axis or third cervical vertebra. The resulting pressure on the motor fibers at the decussation of the pyramids which occurs at this level along with local pressure of the odontoid may and does give paralysis of the lower extremities with marked spasticity which also includes the arms and hands.

As the brain is not at fault and is uninjured, this group offers excellent possibilities of mental progress and the chief problem concerns management and modification of the spasticity and contracture. Great improvement has been observed in several cases following decompression of the posterior ring of the atlas and axis. This permits additional space and improved circulation to the spinal cord and medulla and thus eventually assists in subsequent correction of the orthopedic problems.

In one instance, I operated a four days infant with immediate and complete relief of the spastic paralysis. The child is three years of age at the present time, and progressing without other correction for the spastic paralysis that originally involved both arms and legs. Recently, a ten months baby was decompressed over the high cervical cord for marked spastic paralysis of the lower extremities. The ring of the atlas, the axis, third and fourth laminae were removed. The spasticity and paralysis have so abated that crawling movements are now spontaneously being attempted.

I call your attention to these results because of the need to carefully distinguish the high spinal spastic from the cerebral palsy type, as such correctional measures are not possible in the latter but require all the skill of the orthopedic surgeon, correctional exercises, and supports.

Time does not permit discussion of the methods of vocational rehabilitation now in use in the hospital and armed forces. They are well known to all and each has its distinct advantage and purpose.

I would in closing, like to call your attention to what may prove to be a more promising attack on the spastic paralysis encountered in the cerebral palsy group from the standpoint of rehabilitation of movement than the measures we have depended upon in the past. The results have been welcomed by the orthopedic surgeon and physio-therapist alike and are worthy of an honest trial and effort.

In the cerebral palsy group, the injury lies chiefly on the cortex, or in the mid-brain. Many simple patterns of movement arise at the level of the spinal cord and medulla. It has been possible to train cerebral spastics along the lines of simple amphibian patterns of movement, such as swimming and crawling movements, when apparently paralyzed to the higher patterns of the cortex.

Co-ordination in the athetoid group has become much easier and correction of many defects of posture and progress in the spastic has been accomplished by reverting to patterns of movement common to the infant rather than attempting skilled activities more acceptable to man's concept of a normal adult.

The physio-therapy department of the Neuro-Physical Rehabilitation Clinic has developed some of these primitive patterns. Details of treatment are available upon request. We have found the old adage that "one must creep before he walks" to apply to this group. Certain free swimming movements in our experience have led directly to better ultimate progress of the child in unsupported efforts at balance and in walking.

The problems of rehabilitation vary with each individual and each case becomes a special need for study. As a group, the cerebral palsies present a spectrum from the mildest types without need for physical correction to the spastic quadraplegia with mental defects beyond hope of rehabilitation.

Progress is gradually being made in the classification and adaptation of activity to the general needs of the patient and the community.

The greatest need today is a better understanding of this group and an effort to widen the social circle of those whose mentality is good, though the physical handicap may be severe.

250 *So.* 17*th St.*

DISCUSSION

DR. GEORGE J. BOINES (Wilmington): Dr. Fay has given us valuable suggestions for the rehabilitation of a group of patients who have been heretofore considered hopeless. However, we have had little work so far in the actual prevention of the deformities which render a spastic almost a useless individual in many cases. If one checks up in the textbooks and literature as to the actual treatment of spastics one finds the same thing as for poliomyelitis patients, that is muscle transplantation, corrective exercises, and other surgery, but very little has been done for the actual prevention of the deformities themselves.

In the past three or four years great emphasis has been placed on the treatment of deformed patients through physical medicine. This has been done chiefly through work of the Baruch Foundation and armed services in rehabilitating deformed individuals.

We know that through the use of psychotherapy, occupational therapy, muscle rehabilitation and prostigmin in the acute, subacute and chronic stages of poliomyelitis, we have been able to correct deformities that were not being corrected by surgical methods.

We have tried the same methods with a number of spastics. We have one spastic 18 years of age who has shown considerable improvement with prostigmin. We find that many of the tight and short muscles in these patients can be lengthened and the patients can be taught, through coordination exercises, to use their limbs in a better fashion than they were able to do before.

I would like to ask Dr. Fay if he does not think that this opens an important field in the treatment of spastics, that is, getting the patient early and making early diagnosis and trying to prevent the deformities which follow, by the means outlined above.

One thing, in Delaware we have no such thing as a Spastic Clinic. Spastics, at home, become a burden to their family and to society, and receive little treatment. The only treatment I know of that they receive is an occasional or yearly visit by some man prominent in spastics, and are then sent home, as nothing can be done.

I am sure through the suggestion of Dr. Fay a lot can be done for these cases, as has been done for chronic poliomyelitis patients.

DR. M. A. TARUMIANZ (Farnhurst): I would like to ask a question. But first, I would also like to emphasize that I enjoyed Dr. Fay's presentation. I have heard so much about Dr. Fay's present attempt to find more physical methods to correct the unfortunate situation of cerebral palsy cases, or spastics, or in several spastic cases. However, Dr. Fay spoke of those who still have sufficient mentality to become useful citizens in some way, citing many cases who apparently have still ability to become musicians, and so on. But is it not true that one cannot establish the level of intellectual endowment and the remaining intellectual capacity unless one has a proper approach by means of psychological tests? Is it not true that we should attempt to classify these youngsters in two groups—imbeciles, or morons; and fairly well established mentality?

So I would like to ask whether in his cases he has exercised that approach of psychological tests and what his findings have been?

I enjoyed Dr. Fay's paper very much.

DR. FAY: I believe the question, of course, of early diagnosis is of prime importance as in almost every disease, and correction is often best, perhaps, by not only early diagnosis but by immediate physical measures that are indicated for that individual. However, we find that each case is a law unto itself; it must be analyzed and one cannot just provide a general treatment for cerebral spastics. I think it is as wide as the spectrum of any other material that we become associated with. So that the first need is one of careful classification. If we choose to accept the intellectual levels current today one, however, may be easily misled in the guiding of these people, because, unfortunately, the mental and intellectual tests today are not standardized as far as the function of the brain is concerned, and one person may in certain situations meet a higher level than on other occasions. We believe that might have something to do with the amount of food and fluid intake, and that a patient should be as carefully attended on the feeding program as when you take basal metabolism. However, that has not come into vogue yet. We have in our clinic Dr. Lew Kennedy, the author of "Rehabilitation of Speech" and she is giving us the mental levels, and I am trying to coordinate the findings of others with some of the physical factors. Now we are enjoying the confusion encountered by loading our children with food and fluid on certain mornings and finding them falling down on tests. On the other hand we will dehydrate and balance this carefully to get better fluid supply to the brain and they will come in with different reports of this child getting better. So I feel we need mental tests, but standardized mental tests — we can't be satisfied with the Binet tests and the rest of the tests today, any more than we can if we were to take a basal metabolism of everybody in this room, irrespective of what he had for breakfast today.

Therefore, I feel that drawing conclusions may be clarified enough to give us a pattern that is consistent, but until the mental testers can become more organized and consistent on a standardized basis I am waiting and watching and correlating what I can. But I am far from being able to drawing conclusions and perhaps those will not be forthcoming for a good many years.

HEALED DISSECTING ANEURYSM OF THE AORTA, WITH SIGNS OF AORTIC INSUFFICIENCY

Case Report

J. RICHARD DURHAM, M. D.,[*]
Wilmington, Del.

Among the many cases of dissecting aortic aneurysm reported there are several which have presented the symptoms and signs of aortic regurgitation, resulting in an antemortem diagnosis of aortic valvular disease. A review of the literature by Gouley and Anderson[1] showed in such cases that the dissection proceeded downward to the level, or nearly so, of the aortic ring. They believed that the simulation of aortic valvular disease was dependent on the proximity of the aneurysm to the valve ring and not on the extent of the dissection. It is our purpose to present such a case, to discuss its mechanism, and to illustrate an interesting example of digitalis intoxication.

C. W., a 68-year-old white male, was admitted to the St. Francis Hospital on April 19, 1941. He was of Polish extraction but had lived in this country for the last 20 years. Very little history could be obtained because of his inability to speak English; however, the following facts were elicited: patient had been taking "medicine" at home for three weeks because of shortness of breath, cough, and swelling of the ankles. He had apparently always enjoyed good health except for an attack of "rheumatism" at the age of 35. There was no history of chancre. Five years prior to the present illness, patient remembered experiencing sudden severe substernal pain while chopping wood. This was of short duration, did not recur, and no treatment was received, What other history could be obtained was of no significance.

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[*] Attending Cardiologist, St. Francis Hospital; Associate in Cardiology, Delaware Hospital.

Examination revealed an orthopneic, emaciated white male, with visible cervical pulsations related to systole. There was moderate pitting edema of both ankles, some cyanosis of face and nail beds, and a Quincke's pulse. Blood pressure in the right arm was 222/52 and in the left arm 220/0. The radial pulse was of the Corrigan type and the rate varied between 36 and 40 beats per minute. The chest was emphasematous with dullness and moist rales at both bases. A diffuse thoracic shudder occurred with each systole and the apex beat was palpable in the 6th interspace in the anterior axillary line. A loud diastolic murmur was heard in the aortic area and transmitted downward over the precordium, and a presystolic murmur was heard at the apex. Percussion revealed the heart markedly enlarged to the left with no evidence of broadening at the base. Examination of the abdomen revealed a palpable liver edge which was smooth and not tender. Duroziez's murmur was present over the femoral vessels, and the systolic blood pressure of the lower extremities was slightly higher than that of the upper extremities. The remainder of the physical examination was non-contributory. The provisional diagnosis was aortic insufficiency, rheumatic; complete heart block, and possible digitalis intoxication.

Blood chemistry revealed the following: blood urea 55 mg%, creatinine 2 mg%, Kolmer and Kahn, negative. Blood count showed moderate secondary anemia and urinalysis was negative except for a trace of albumin.

Because of the possibility that the patient had been treated with digitalis before admission and in order to determine the nature of the heart block an electrocardiogram (Fig. 1) was taken on the day of admission. This showed a ventricular rate of 40, and marked ST-T changes in leads I, II & IV F suggesting digitalis intoxication. The ST configuration in lead IV F is quite unusual. Digitalis was withheld and the patient treated with oxygen, salyrgan, atropine and adrenalin in an attempt to overcome the heart block and restore cardiac compensation. The pulse gradually increased over a period of two weeks, becoming more irregular. A second electrocardiogram (Fig. 2), taken on May 6, 1941, showed a ven-

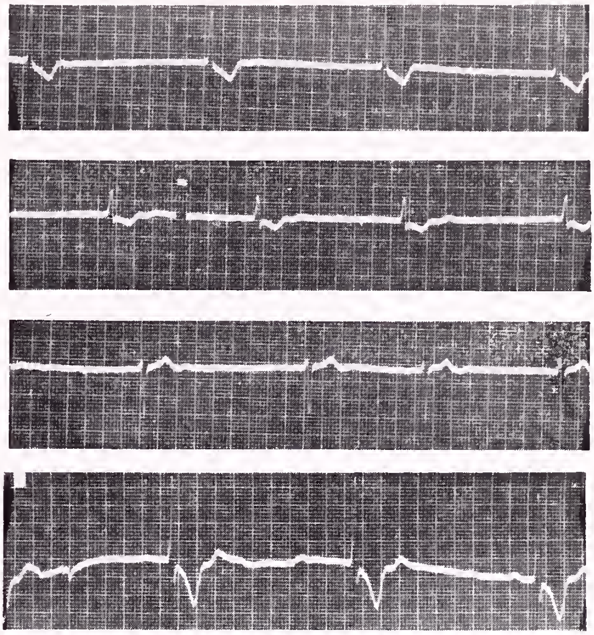

Fig. 1. EKG taken 4/19/41. Auricular fibrillation with idioventricular rhythm, left axis deviation, and ventricular rate of 40. Note St configuration in lead IV F.

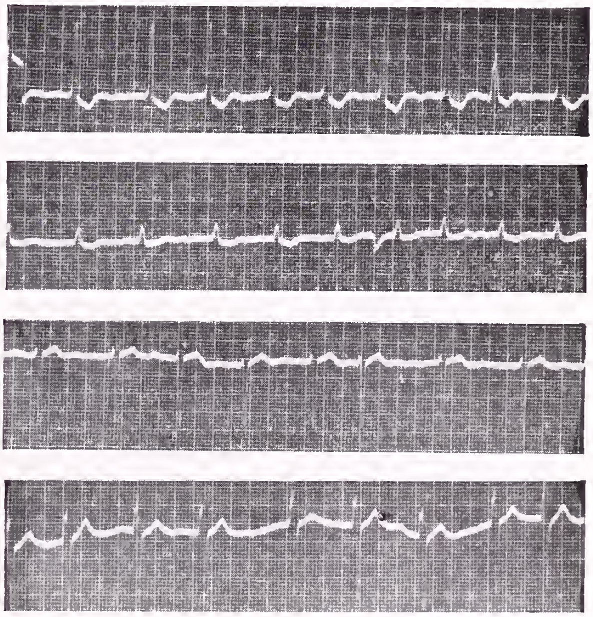

Fig. 2. EKG taken 5/6/41. Auricular fibrillation with disappearance of heart block. Ventricular rate 84-92. Note change in ST configration in leads II and IV F. Evidence of left ventricular strain persists.

tricular rate of 92 and a disappearance of the idioventricular rhythm. The changes in the ST-T segments, most notable in lead IV F, occurred following withdrawal of digitalis. This case again illustrates the need for caution when administering digitalis to older cardiac patients.

Little improvement followed the increase in heart rate, and the patient expired suddenly on the 24th day of hospitalization.

Autopsy performed by the pathologist, Dr. Douglas M. Gay, on the day of death revealed (in pertinent part) a greatly hypertrophied heart measuring 17.5 cm. in transverse diameter and weighing 700 grams. The myocardium was homogeneous with no evidence of scarring. All valves appeared competent, with no trace of sclerotic changes, and the aortic ring was not dilated. Eight-tenths (.8) cm. above the aortic valve ring there was discovered a transverse split in the aorta 6 cm. long (Fig. 3). The central portion of this lesion opened into a rounded bulge of the outer wall of the aorta, measuring 2 cm. wide and 2 cm. deep. The split involved the intima and this layer of the aorta formed a valve like semilumar flap which projected into the lumen of the vessel. The inner layer of the lesion consisted of pale grey tissue, and there were several strands of scar tissue in the lateral edges of the split. The aorta showed no gross evidence of arteriosclerosis, and retained a normal amount of elasticity. The coronary vessels were not diseased. The liver revealed evidence of passive congestion.

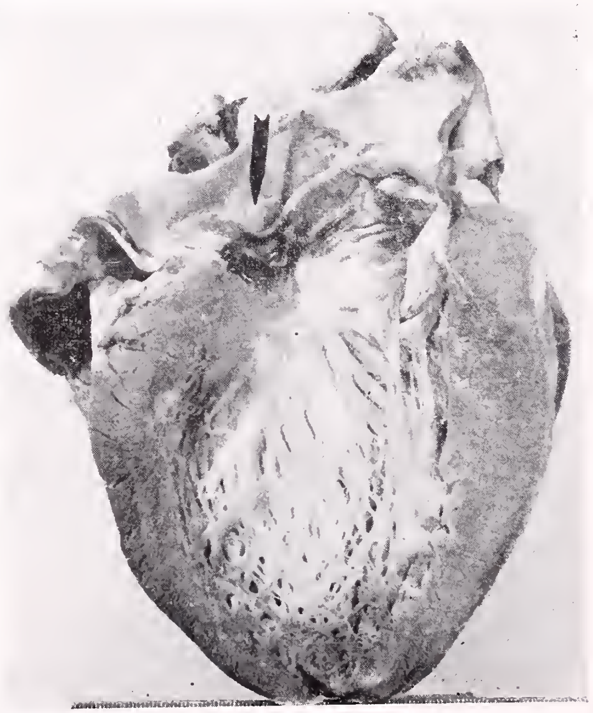

Fig. 3. Section of heart showing left ventricle and first portion of aorta. The free edges of the aortic valves and lip of the aneurysmal sac have been stained with methylene blue. Note myocardial hypertrophy.

DISCUSSION

The mechanism of regurgitation in this case was caused by the lip of the aneurysm interfering with closure of the aortic valves. One can visualize from figure 3 that the blood column in the aorta following systole would easily project the lip of the sac into the lumen of the valve ring. It can be reasoned that the regurgitation was complete since it has been previously shown in cases of dilated aortic rings, in which central leakage of blood occurs in diastole, that eroding and roughening of the free margins of the leaflets resulted. No such changes were found in this case. Larger aneurysmal sacs with more extensive dissection may produce a similar clinical picture through dilatation and distortion of the aorta[2], and still larger dissection may produce symptoms of insufficiency entirely from the leakage of blood into the sac[3]. In this case it is surprising that the aorta showed no degenerative or inflammatory lesions at autopsy, other than the sac described. It is possible, however, that dynamic aortic dilatation may have been a factor in addition to the mechanical interference with valve function described above. Unfortunately, no x-ray studies of the heart were made. The onset of the intimal tear may have occurred five years prior to the present illness at which time the patient was seized with severe chest pain while chopping wood. Eskelund[2] believes rupture occurs in an area predisposed by degenerative changes when the blood pressure rises beyond the limits of vascular resistance or following a relatively unnoticed trauma.

Aortic regurgitation is not uncommonly associated with a presystolic murmur, and such a murmur was heard in this case. The most generally accepted explanation is that it is due to the anterior leaflet of the mitral valve being pushed into the path of the blood stream entering from the left auricle by the regurgitation through the aortic orifice. Gouley[8] believes the Flint murmur can be produced by a characteristic deformity of the right leaflet of the aortic valve which he has described but which was not present in this case.

SUMMARY

A case of healed dissecting aneurysm simulating aortic insufficiency is presented with a discussion of the mechanism involved. This etiologic possibility should be considered in aortic insufficiency of non-luetic and non-rheumatic origin.

623 *Delaware Avenue.*

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Candidates for reexamination in Part II must make written application to the secretary's office not later than April 15, 1946.

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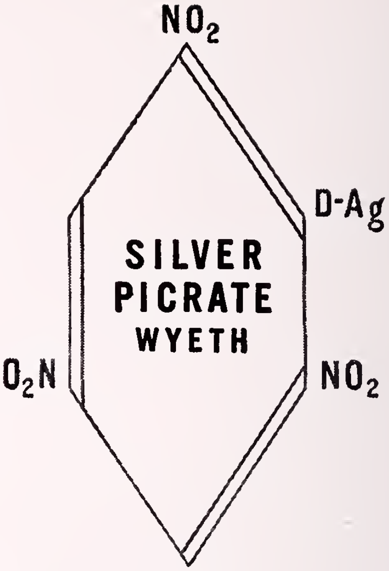

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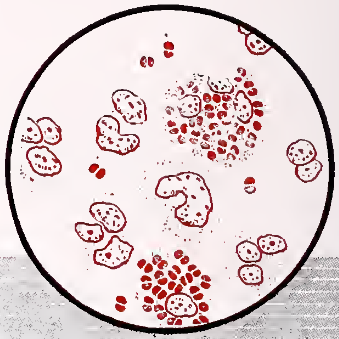

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SPECIAL SESSION

The President and Council of the Medical Society of Delaware called a Special Session of the Society which was held at the Delaware Academy of Medicine, Wilmington, on Tuesday, April 2nd, at 8:30 p. m. The importance of this Session cannot be overestimated.

The purpose of this unique session was to instruct all the members concerning the pending legislation which, if enacted into law, would revolutionize the practice of medicine in this country. Special emphasis will be placed on the Wagner-Murray-Dingle Bill which proposes, despite the quibbling of its proponents, nothing less than the socialization of medicine in the United States in a pattern closely resembling that proposed in Great Britain. Our British confreres are preparing an all-out campaign against the proposals there; we can do no less here.

The meeting was addressed by Dr. Frank Borzeu, of Philadelphia, a member of the National Physician's Committee, who is thoroughly conversant with this Bill in its entirety, and explained its details and why the medical profession is opposed to them. Doctors, who are instinctively opposed to political medicine, make poor arguments for their viewpoint unless they have had special instruction. With the facts well in hand, any physician can convince his own public of the merits of his argument, and since only an enlightened and militant public opinion can defeat the present intent of certain political groups, the unmistakable duty of each and every doctor who belongs to the Society was to be on hand. Despite the inclement weather, the attendance was gratifyingly large.

Pending the new Directory of Medical Specialists, which will not appear for several months, it is very desirous that this office have a complete list of all the diplomates in Delaware of the various American Boards for the specialties. Kindly send to the Editor your name and address, the name of the particular board, and the date your certificate was issued. Our thanks.

Also, please send us any corrections that should be made to the Directory page, published in the January issue of The Journal. Since this page cannot be published every month, it is important that any changes due to new elections, death, removal, etc., be reported promptly. Again, our thanks.

NEW NATIONAL FORMULARY

Many persons are confused by the existence of two official books of drug standards in the United States—the U. S. Pharmacopoeia and the National Formulary.

"The United States Pharmacopoeia," said Dr. Justin L. Powers, Chairman, Committee on National Formulary, American Pharmaceutical Association, "from the very beginning has restricted its scope to drugs selected by the medical members of the Revision Committee and believed by them to possess greatest therapeutic merit. This selectivity has prevented it from recognizing a large number of drugs which, judging by the extent of actual use by the medical and pharmaceutical professions, must possess some merit. Briefly, admissions to the Pharmacopoeia are on the basis of therapeutic merit while admissions to the National Formulary are on the basis of extent of use. For instance, in the course of a revision of the Pharmacopoeia, numerous drugs are deleted, many of which continue to be used extensively for varying periods of time thereafter. Since the deletion does not mean that the drug immediately becomes obsolete, it is often desirable and even essential to continue to provide official standards for it."

The first edition of the National Formulary appeared in 1888. Official recognition and endorsement came when the Federal Food & Drug Act of 1906 adopted the National Formulary and the U. S. Pharmacopoeia as legal standards. Increased responsibility brought an ever increasing amount of attention to the careful preparation of the Formulary, and during the past several years its revision has been on a continuous basis with the efforts of full time employees directed solely to this work.

Public health has developed to the point where it has become apparent that many diseases cannot be controlled without full citizen understanding and participation. The provision of x-ray and diagnostic facilities, sanatoria, and rehabilitation services will not reduce tuberculosis unless people know the value of an x-ray of the chest, have one taken periodically, and take the necessary treatment if a diagnosis of tuberculosis is made. Mayhew Derryberry, Ph. D. Pub. Health Rep., Nov. 23, 1945.

BOOK REVIEW

Harofe Haivri. Vol. II, 1945, of Harofe Haivri (The Hebrew Medical Journal), a semi-annual bilingual publication edited by Dr. Moses Einhorn, has appeared.

The contents of this journal are not confined to technical medical topics, but are divided into several sections covering a variety of related subjects, such as medicine in the Bible and Talmud, old Hebrew medical manuscripts, Palestine and Health, etc. In the medical section, the following subjects are discussed: The Treatment of Heart Failure by Harry Gold, M. D., The Anemias and Their Treatment in the Light of Recent Advances by Gershon Ginzburg, M. D., and The Child and His Mental Health by Samuel J. Lipnitszsky, M. D.

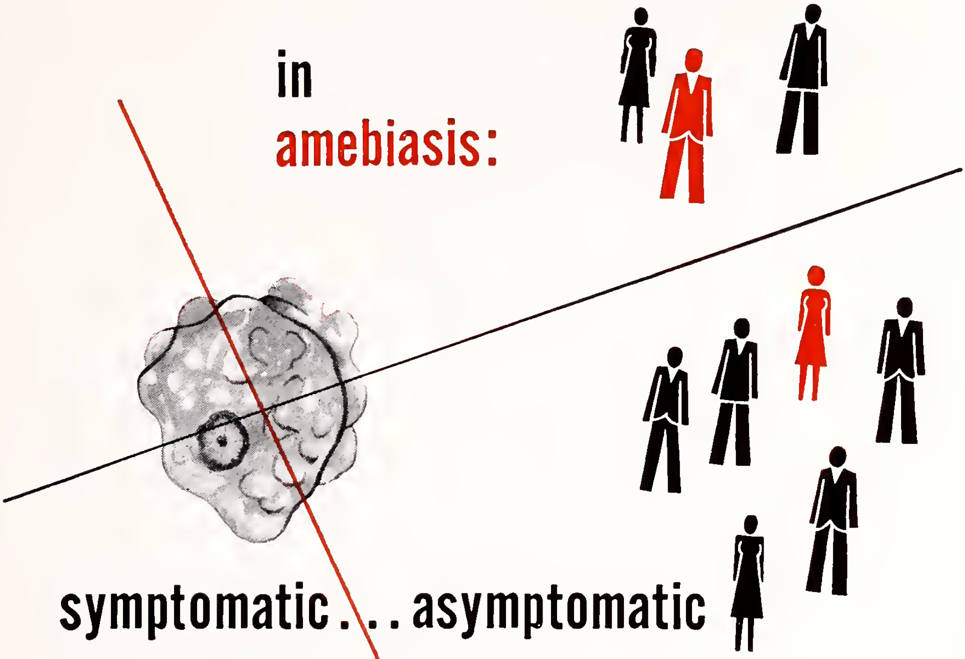
Under the topic of Historical Medicine Prof. Nahum Slushtz, of Palestine, writes an interesting article on Isaac Ben A'mran, famous physician and philosopher, who lived in Keiruhan in the middle of the 18th century and served as court physician to Emir of Zaduth Alla.

In the section on Talmud and Medicine, Dr. M. Ben-Ami writes explanatory remarks on the medicine in the Bible; in addition, Dr. Z. Muntner discusses the social status of the physician in the Talmud.

Dr. Solomon R. Kagan offers an article of particular interest on the contribution of the pioneer physicians to the growth and development of the Zionist movement throughout the world. Since the Middle Ages the Jewish physician has exerted great influence on the communal life of Israel. They were not only the healers of the body and mind, but also leaders, statesmen and diplomats who fought for the rights and freedom of their brethren. The current issue discusses the contribution of the Russian and Palestinian physicians to the Zionist cause.

The book review section contains detailed reviews by Dr. A. Goldstein and Dr. L. Herbert of Dr. A. Sadovsky's book "A Textbook on Obstetrics," in Hebrew, published by the Hadassah Medical Organization.

There are complete English summaries of all the original articles.



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1. *Barr, D. P.: Modern Medical Therapy in General Practice, 2:1830, Baltimore, Williams & Wilkins Company, 1940.*
2. *Stitt, E. R.; Clough, P. W., and Clough, M. C.: Practical Bacteriology, Haematology and Animal Parasitology, ed. 9, Philadelphia, P. Blakiston's Son & Co., 1938, pp. 410-412.*

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*

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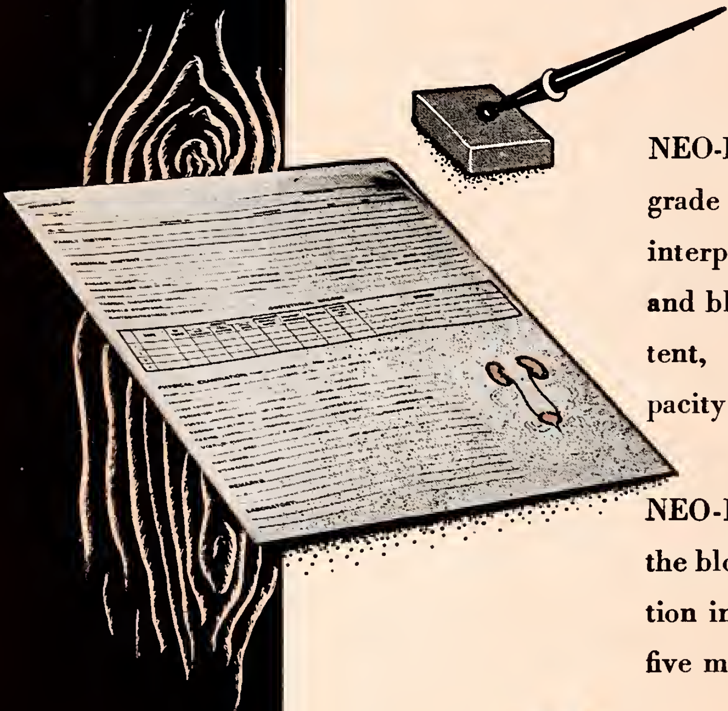

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*Anderson, Geo. K., M.D.: *The Importance of Protein in Diet Therapy,* J. Am. Dietet. A. 21:436 (July-August) 1945.

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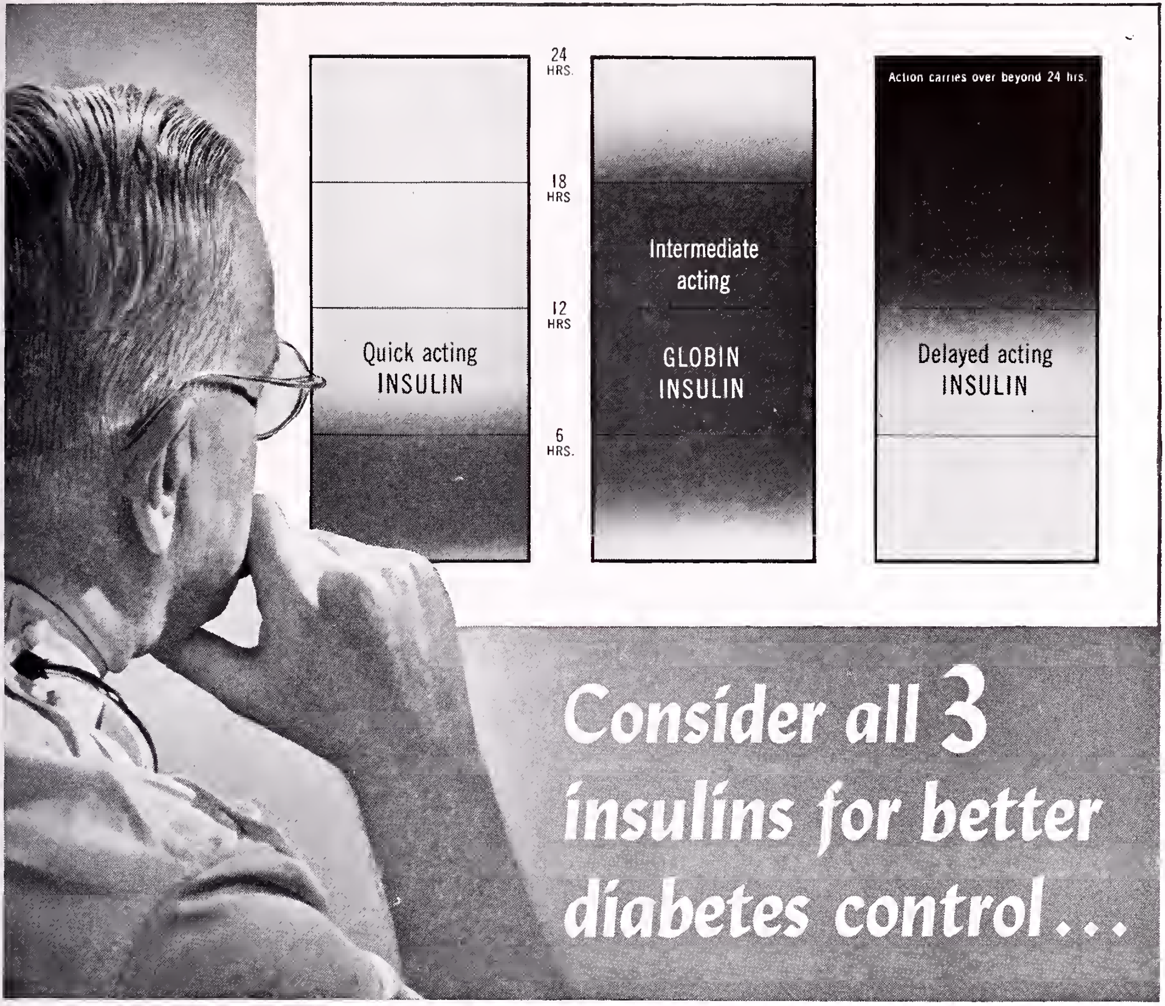

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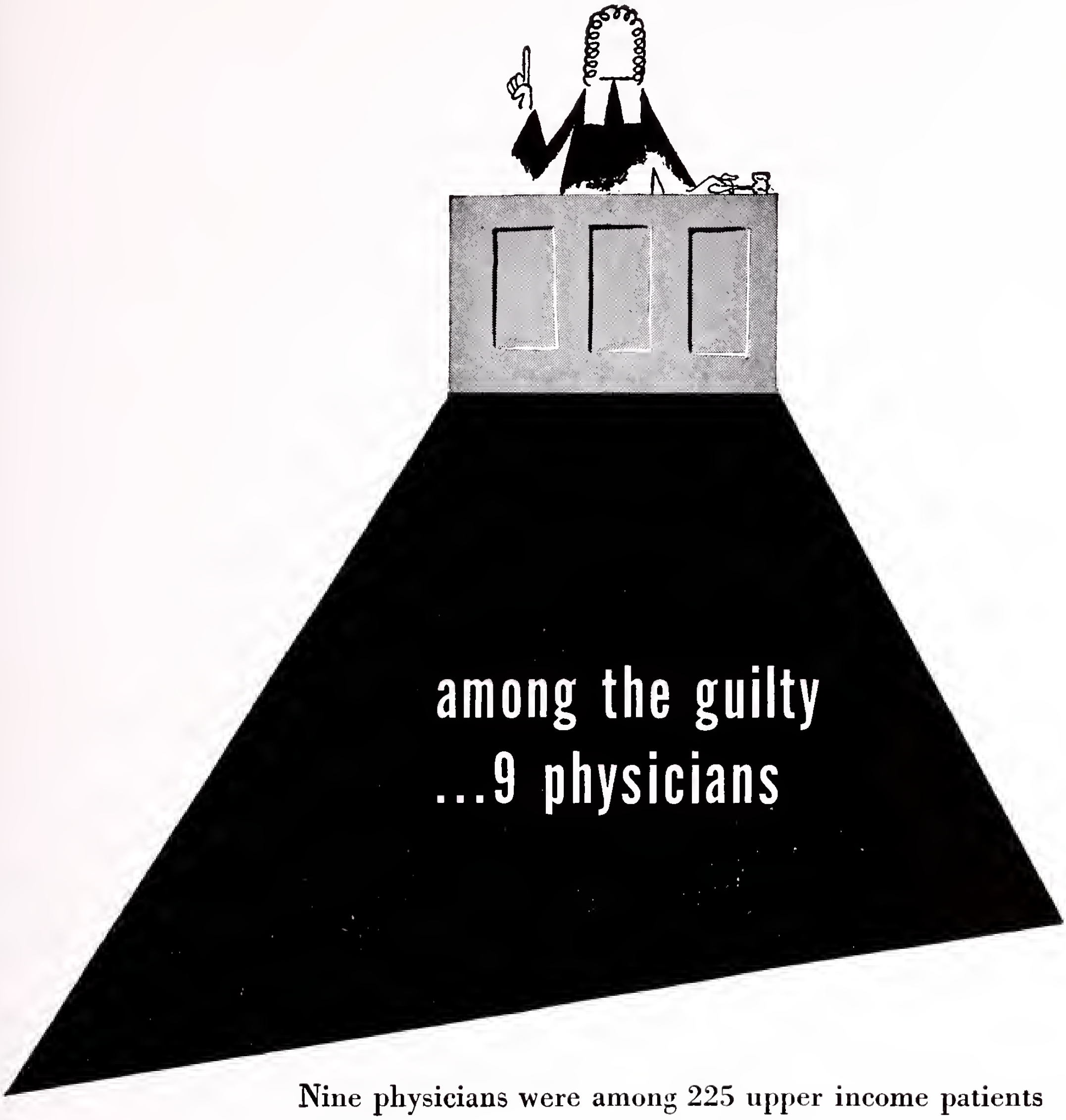

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1. New England J. Med. **228:**118 (Jan. 28) 1943.
2. J. A. M. A. **129:**613 (Oct. 27) 1945.

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*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

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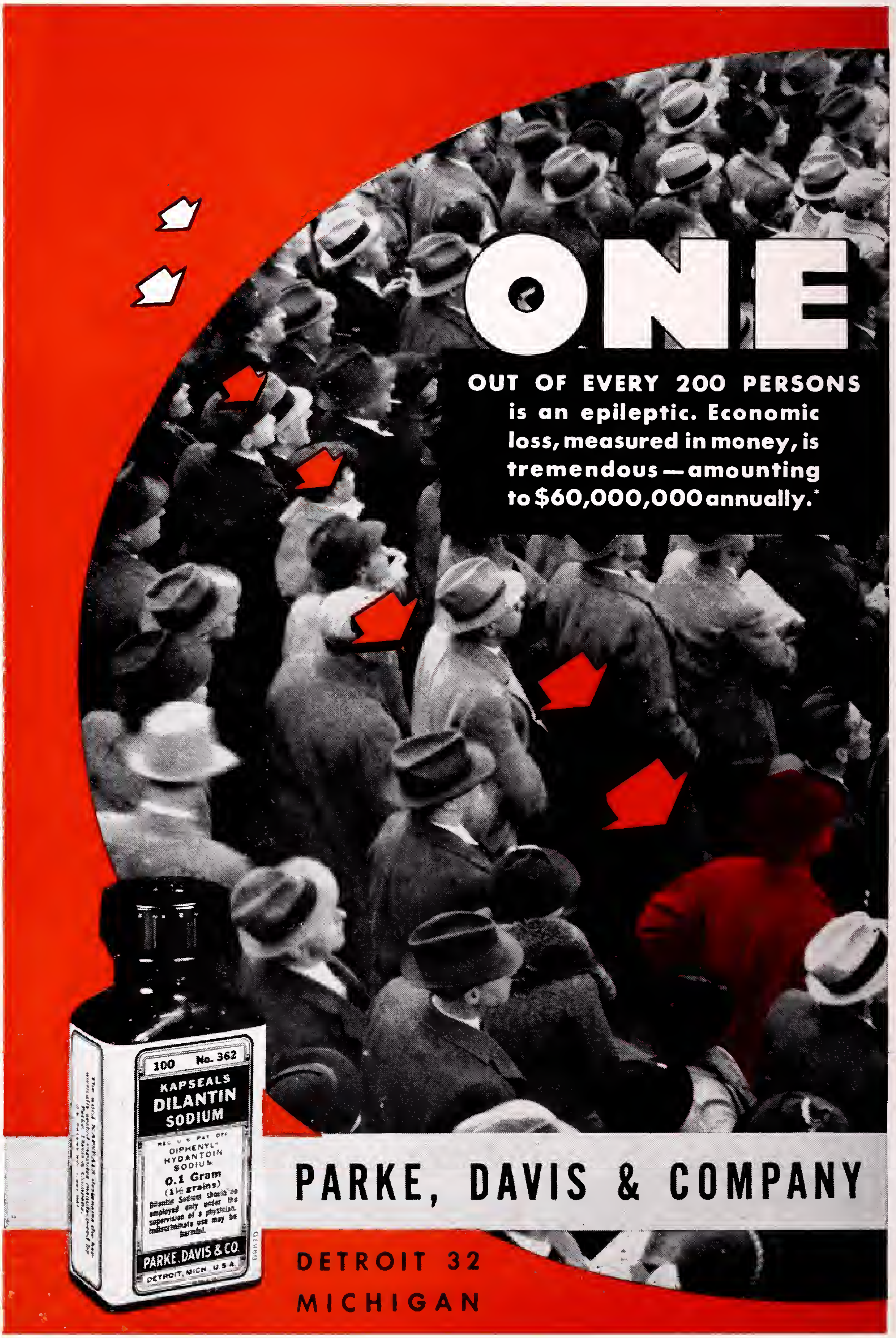
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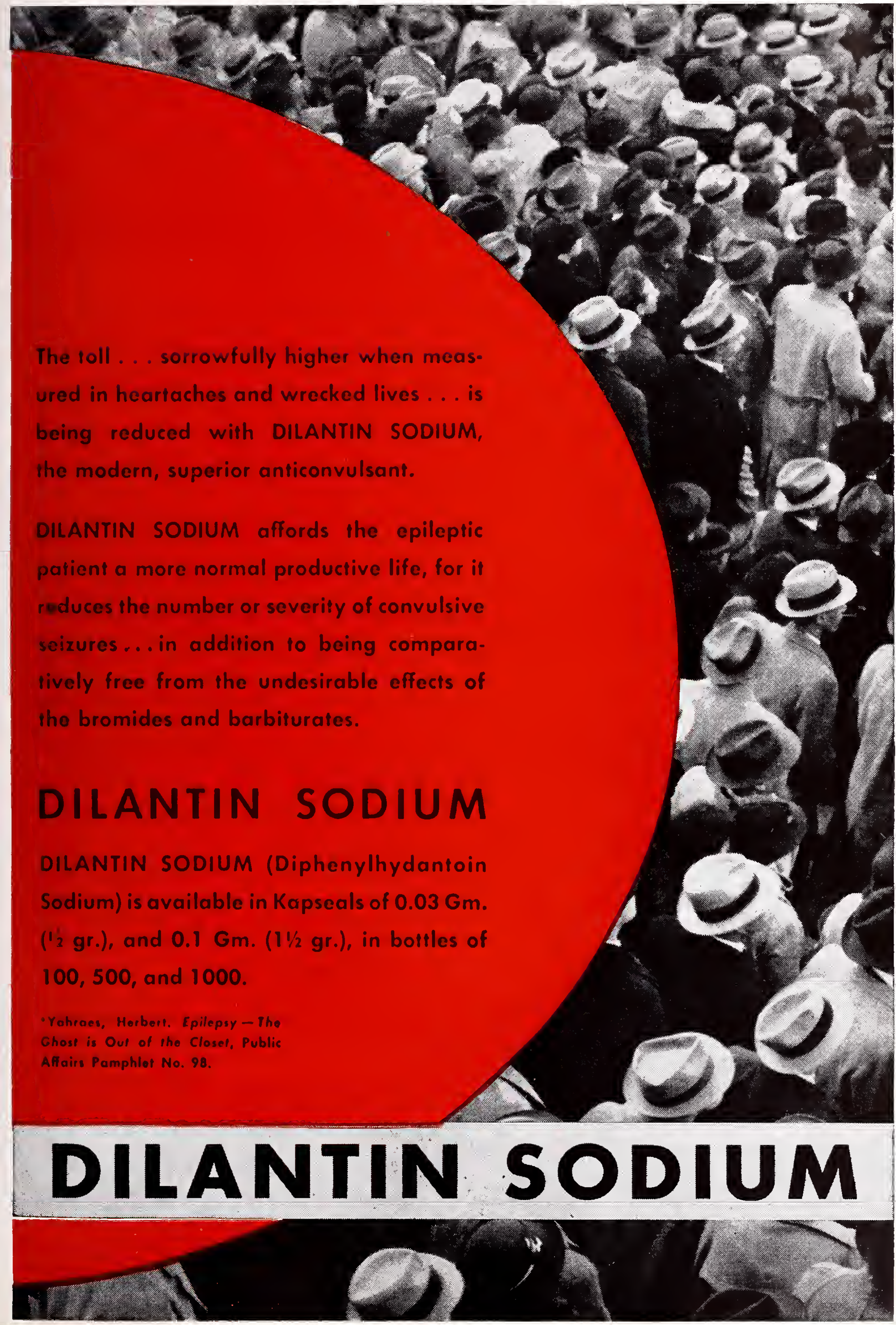

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*Yahraes, Herbert. *Epilepsy — The Ghost is Out of the Closet*, Public Affairs Pamphlet No. 98.

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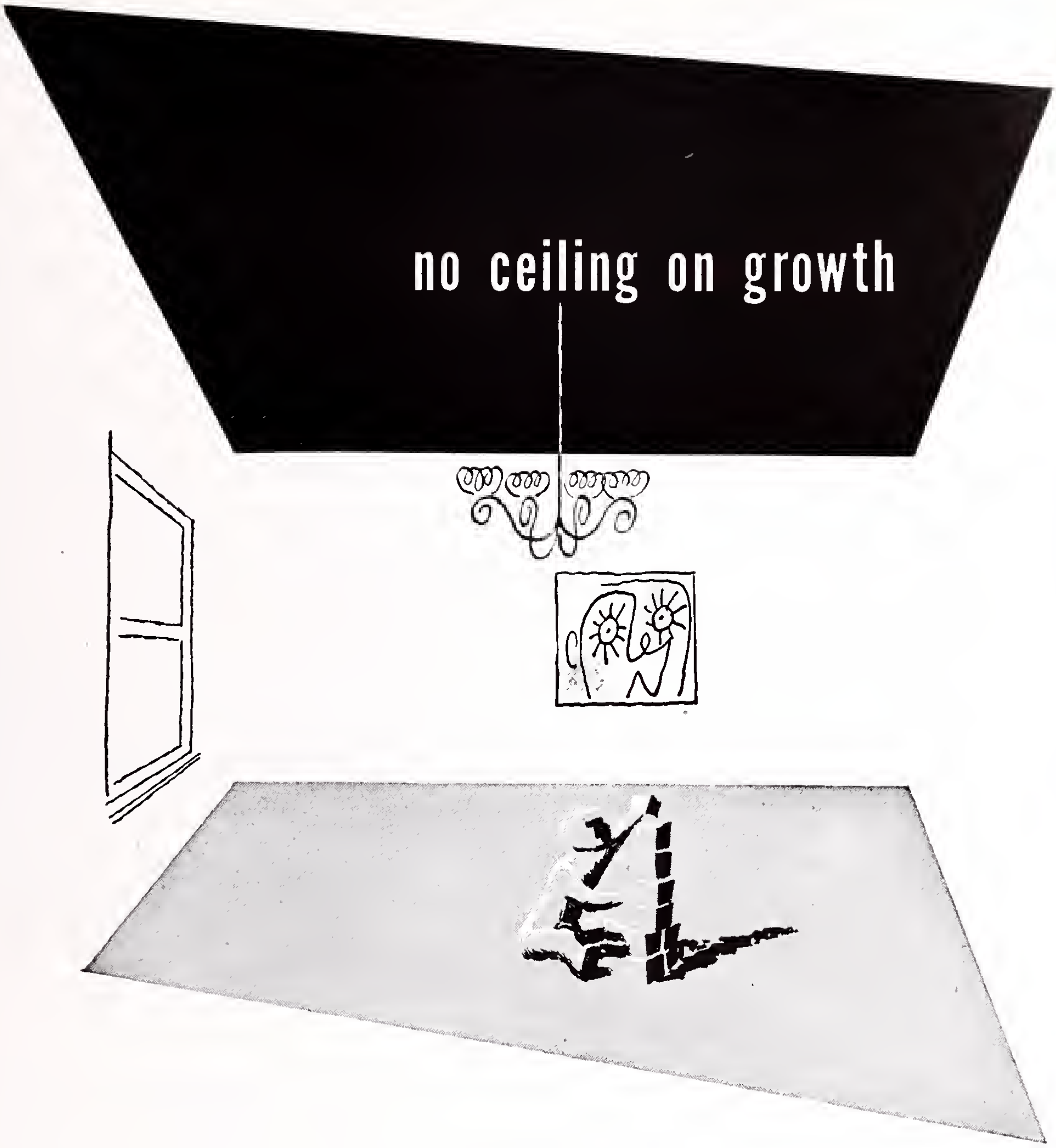

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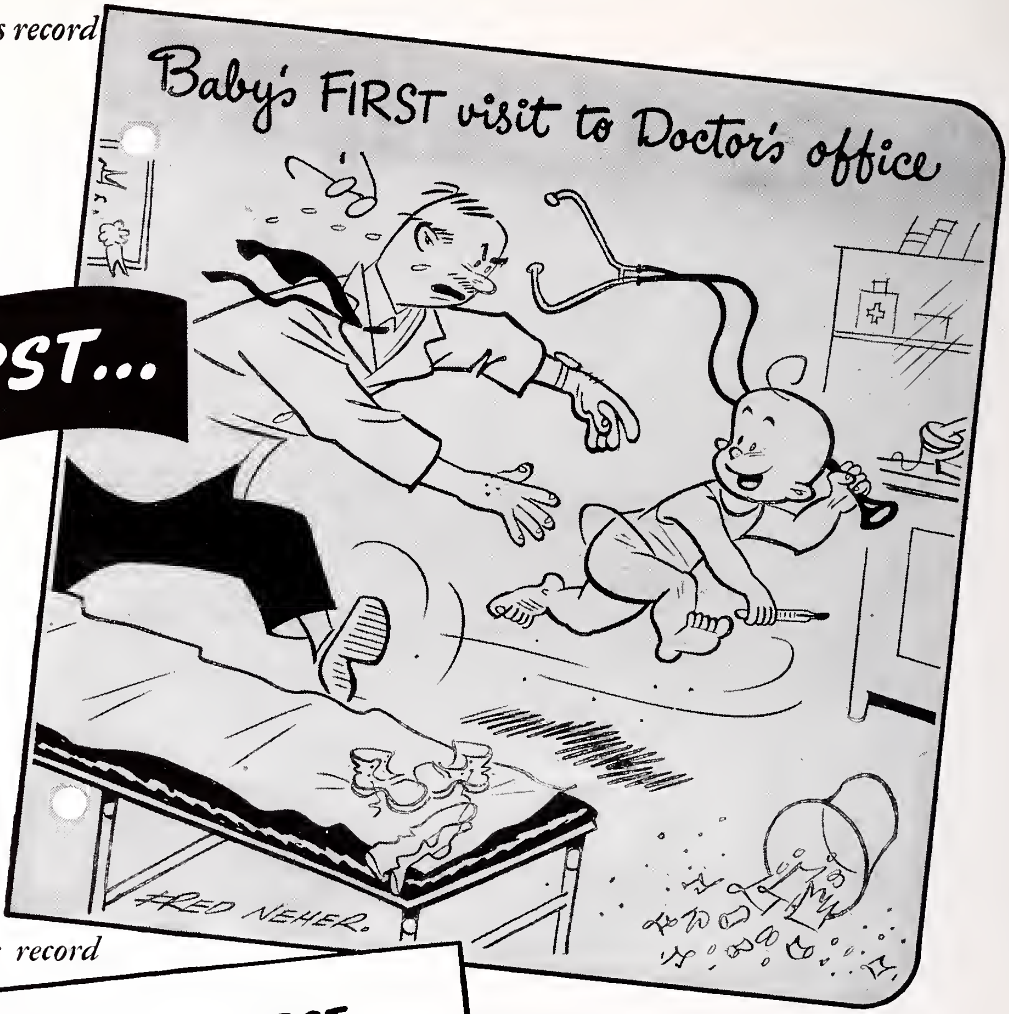
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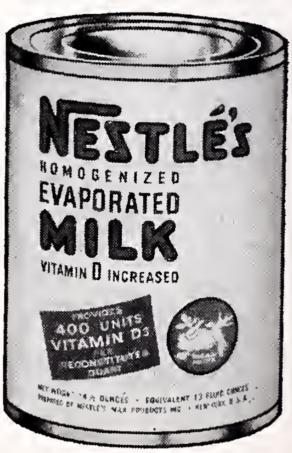

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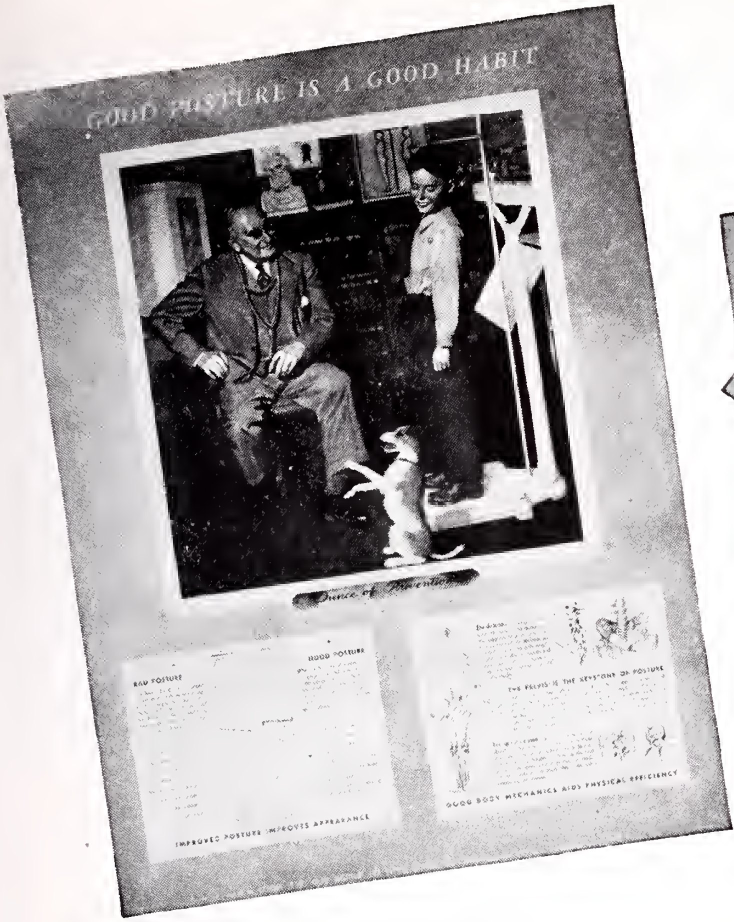
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2. Eastman, N. J., and Scott, A. B.: Human Fertility 9:33 (June) 1944.
3. Warner, M. P.: J. A. M. A. 115:279 (July 27) 1940.

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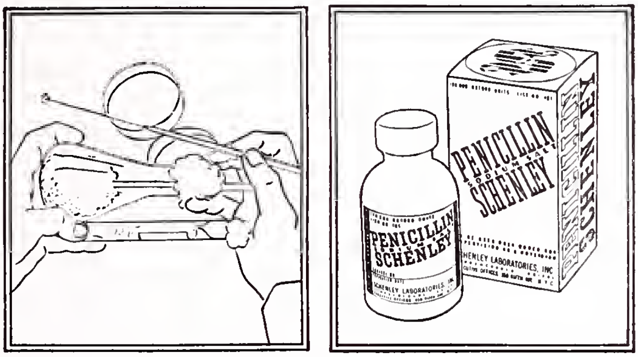

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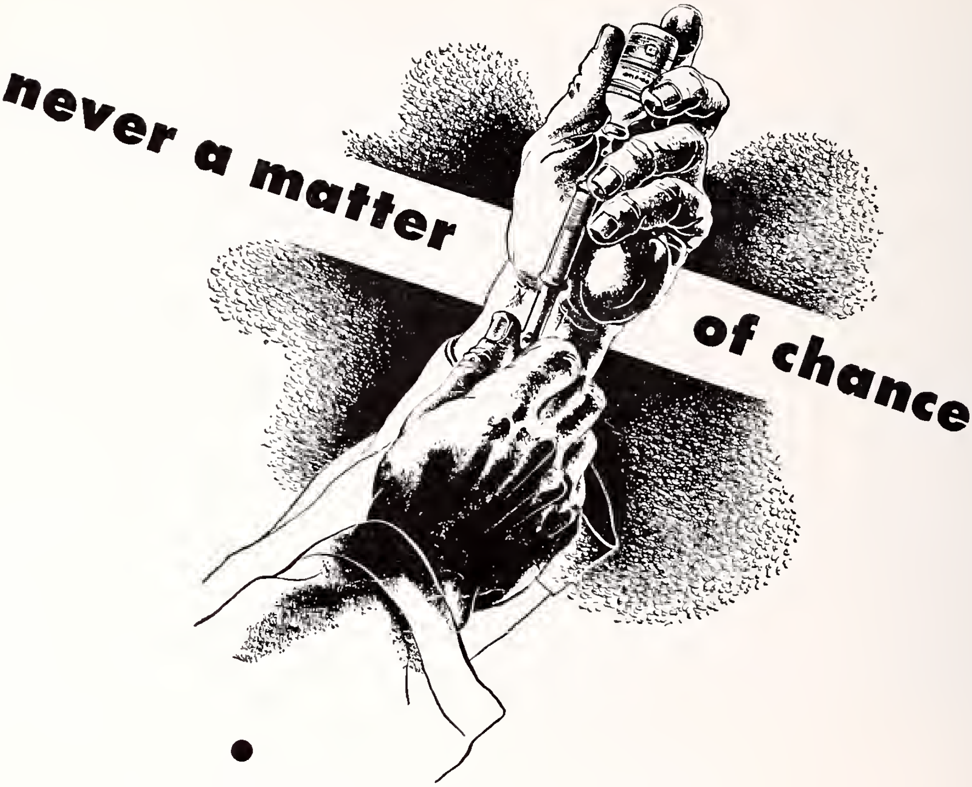
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THE USE AND EFFICACY OF SULFONAMIDES AND PENICILLIN*

Arthur G. Lueck, M. D.,**
Washington, D. C.

Any discussion which deals with both the sulfonamides and penicillin can be simplified by adopting the concept that the susceptibility or resistance of bacteria to these drugs is purely relative. Imagine, for instance, the organisms susceptible to sulfonamides arranged in a vertical column, with those most sensitive at the bottom and appearing above one another according to their increasing resistance to the drug. Near the bottom would be the Shigella group, and an example of an organism at the other extreme would be the virus of rabies, which is practically unaffected even in vitro by huge dosages of sulfonamides. In our column the highly sensitive strains are inhibited by small concentrations of sulfonamides, in vivo as well as in vitro, but somewhere in the ascent of this scale a level is reached at which it is no longer practical to administer a sulfonamide; here the dosage needed is such as to produce greater harm to certain body tissues than would the disease we seek to eradicate.

A graphic picture such as this would require frequent revision as the various organisms or strains change their individual resistance to the agent. For example, in 1942 type seventeen streptococcus of group A would have appeared near the bottom of the column, readily inactivated by sulfonamides, but at the present time it stands near the top as an organism that almost flourishes in the presence of sulfa drugs. Many strains of Neisseria gonorrheae have likewise ascended the scale to levels untouchable by safe therapeutic dosage. Other bacteria have behaved in a similar manner, so that if one could prepare such a list as it would have appeared nine years ago at the beginning of the sulfonamide era, for comparison with one prepared today, a striking difference would be seen. Such a chart can, of course, be only imaginary because of the complexities posed by the existence of numerous strains of each bacterium.

Imagine now a list of organisms prepared in a similar fashion for penicillin. Many would appear in approximately the same position as in the sulfonamide list, while others would be placed much differently. For instance, the bacillary dysentery group of bacilli are well within the therapeutic range on the sulfone chart, but high on the penicillin list as being unaffected by present-day dosage. Spirocheta pallida, on the other hand, would have much the opposite position in the two imaginary columns, unaffected by sulfonamides but readily inhibited by penicillin.

The penicillin list would differ in still another way. The line of demarcation between therapeutic and impractical dosage would, first of all, be much higher; many more organisms respond to penicillin. Second, this level is not yet known. Until recently, the size of the dose had been somewhat limited by the availability of penicillin; hence it may be that increased dosage will bring additional organisms into the therapeutic range. Let it suffice to say that the field is still undergoing expansion and pioneering.

Indications for the Sulfonamides. Penicillin has stolen much of the glory from the sulfa group of therapeutic agents. Nevertheless, the sulfonamides constituted the first rays of light in the dawn of a new era in chemotherapy. Here for the first time was an agent which would directly attack the activities of micro-organisms without at the same time acting as a serious protoplasmic poison.

Without going into a discussion of the indications for sulfonamides as they existed in "pre-penicillin" days, it would seem most useful to list those diseases in which the sulfa drugs still are more efficacious than penicillin. This is entirely aside from the comparative advantages of the two drugs, which will be discussed later.

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* Read before the Medical Society of Delaware, Wilmington, October 9, 1945.

** Lieutenant Commander (MC), U. S. Navy.

The diseases for which sulfonamides are more effective than penicillin are:

- Chancroid
- Cholera
- Coccidiomycosis
- Colitis. ulcerative
  - (Considered useful in controlling secondary infection).
- Dysentery, bacillary
  - Flexner
  - Shiga
  - Sonne[1]
- Granuloma inguinale
- Plague*
- Tularemia*
- **Undulant fever**[2]
- Urinary tract infections[3, 4]. (Gram-negative bacilli, B. Proteus, B. Pyocyaneous, staphylococci, streptococci).

*In plague and tularemia, streptomycin may prove more effective than sulfonamides.

No attempt is made to specify which sulfa derivative should be used for each of the above diseases. Generally speaking, sulfadiazine is probably equal or superior to any of the others from the standpoint of effectiveness with minimum toxicity regardless of the disease being treated. Hardy and Watt[5] found that, even in bacillary dysentery, a soluble compound produces more reliable results than insoluble sulfaguanidine or sulfasuxidine. The author gained the same impression while treating sporadic cases of bacillary dysentery in the South Pacific in 1943 and 1944.

INDICATIONS FOR PENICILLIN: Herrell, Nichols and Heilman[6], and Kolmer[7] have listed the pathogenic micro-organisms according to their susceptibility to penicillin, or the lack of it, in vitro and in vivo. To these have been added a wealth of clinical experience from which it is possible to construct a practical guide of diseases which can (a) usually be expected to respond satisfactorily to adequate dosage of penicillin, (b) those in which penicillin should be tried but without certainty of results, and (c) those for which penicillin has proven ineffective. The diseases which usually respond satisfactorily to penicillin are:

- Abscesses and carbuncles[8]
- Anthrax[9]
- Arthritis (gonococcal)
- Carbuncle of the kidney
- Cellulitis
- Empyema (pneumococcal, staphylococcal, streptococcal[9a]). Empyema is treated by parenteral administration plus intrapleural instillation of penicillin. This method obviates drainage by rib resection in a substantial number of cases[10]. The solution for instillation should consist of 500 units of penicillin in each cubic centimeter of saline; irrigation with this solution is unnecessary.
- Endocarditis (gonococcal, pneumococcal, staphylococcal, streptococcal). Endocarditis requires two to three times the disage of penicillin given for most infectious diseases. For subacute bacterial endocarditis, Keefer et al.[11] suggest 200,000 or 300,000 units daily for three weeks or longer.
- Erysipelas[8]
- Furunculosis[8]
- Gas gangrene
- Gonococcal infections[12]
- Impetigo[8]
- Lung abscess[9a]
- Mastoiditis (pneumococcal, staphylococcal, streptococcal).
- Meningitis (meningococcal, pneumococcal, staphylococcal, streptococcal). In meningococcal meningitis, sulfadiazine and penicillin are about equally effective. When penicillin is used, it must be given intramuscularly in usual dosage as well as intrathecally, 10,000 units daily. Combined therapy is indicated in the fulminating type of meningococcal meningitis and in all cases of pneumococcal meningitis[13].
- Ophthalmia (gonococcal, meningococcal, pneumococcal, staphylococcal, streptococcal).
- Osteomyelitis (staphylococcal, streptococcal).
- Otitis media (meningococcal, pneumococcal, staphylococcal, streptococcal).
- Peritonitis (gonococcal, pneumococcal, staphylococcal, streptococcal).
- Pharyngitis (streptococcal).
- Pneumonia (pneumococcal, staphylococcal, streptococcal).
- Puerperal sepsis (staphylococcal, streptococcal).
- Rate bite fever
- Septicemia (gonococcal, meningococcal, pneumococcal, staphylococcal, streptococcal).
- Sinus thrombosis
- Staphylococcal infections[12]
- Streptococcal infections (streptococcus hemolyticus and viridans).
- Syphilis
- Tetanus[6]
- Tonsillitis (streptococcal)[14]
- Urinary tract infections (staphylococcal and streptococcal) which do not respond to sulfonamides[4]
- Vincent's Angina. Penicillin is reported as remarkably effective in the treatment of Vincent's infection[15,16] administered either locally or intramuscularly. The disease is completely eradicated within 24 to 48 hours when penicillin is given intramuscularly, and in slightly longer time when applied locally.
- Weil's disease (Leptospirosis)
- Wound infections.

The diseases which may or may not respond to penicillin are:

- Actinomycosis. Dobson and Cutting [17] report both penicillin and sulfadiazine to be effective.
- Agranulocytosis
- Diphtheria. Corynebacterium diphtheriae is susceptible to penicillin in vitro[7], but has yielded only equivocal results[18] in the actual

disease in humans. As an adjunct to antitoxin therapy, it may lessen the severity of the disease.
Ornithosis. Reported as moderately susceptible by Kolmer[7] in virto; Turgasen [19] treated a case of proven ornithosis with favorable results seemingly due to the penicillin.
Peritonitis (mixed)[20]
Pneumonia (virus) [21]
Psittacosis. Moderately susceptible in vitro to penicillin[7]; Flippin et al.[22] report a fairly well-proven case of human psittacosis as responding clinically to penicillin in 36 hours.
Streptococcal infections (anaerobic)

Diseases which do not respond to penicillin:

Arthritis (rheumatoid)
Asthma
Blastomycosis
Cholera
Coccidiomycosis
Colitis, ulcerative [12]
Dysentery, amebic
Dysentery, bacillary
Dysentery, salmonella
Encephalitis
Filariasis
Granuloma inguinale
Hepatitis, epidemic
Histoplasmosis[12]
Hodgkin's disease
Influenza
Iritis (non-specific)
Leprosy
Leukemia
Lupus erythematosus
Lymphocytosis, acute infections
Malaria
Measles
Moniliasis
Mononucleosis, infectious
Mumps
Paratyphoid fever
Pemphigus[6]
Plague
Pneumonia (Friedlaender's)
Poliomyelitis
Q fever
Rabies
Rheumatic fever, acute
Rocky Mountain Spotted Fever
Toxoplasmosis
Trichinosis
Tsutsugamushi disease
Tuberculosis
Tularemia
Typhoid fever
Typhus fever
Undulant fever[12]
Urinary tract infections (Gram-negative)
Uveitis (non-specific)
Yellow fever

Comparative Efficacy of the Sulfonamides and Penicillin.

A number of diseases respond satisfactorily to either a sulfonamide or penicillin. In such cases the physician is faced with the problem of deciding which agent to use. Individual factors must be considered, such as the available facilities for administering the drug to the patient, fear of needles, or individual idiosyncrasies. The patient's financial status may rarely be a factor, but the present-day low cost of penicillin has all but eliminated this disadvantage.

In the group of diseases just previously listed as responsive to penicillin, there are a few which are subject to controversy as to whether or not penicillin is the agent of choice. It might be argued that diphtheria should be treated with a sulfonamide as the adjunct to antitoxin. In answer, it could be stated that neither should receive much emphasis.

Gonorrhea is more conveniently treated with sulfonamides, but a steadily rising resistance by more and more strains has led to a general adoption of penicillin as the therapy of choice. No significantly sustained resistance of N. gonorrhea to penicillin has been reported.

Sulfadiazine and penicillin are of equal value in the treatment of meningcoccal meningitis. An objection raised to penicillin is that it does not appear in the spinal fluid in detectable levels when given parenterally in usual dosage. Increased dosage may be the answer to this objection. One wonders why so much importance is placed on a detectable level of penicillin in the spinal fluid, since the infection occurs not in the fluid but in the meninges where penicillin can reach the meningococci by way of the capillaries. Reimann[23] doubts that the bacteria in the spinal fluid are of primary concern.

Lobar and bronchopneumonia have been found [24] to respond to penicillin with fewer resulting complications than when sulfonamides are used. Penicillin is often called upon to salvage cases which are failing under sulfonamide therapy. Kinsman et al. [21] found, in a series of 100 cases of pneumococcal pneumonia treated with sulfadiazine, a response almost identical to 75 cases treated with penicillin. There was, however, a more abrupt fall in fever and there were fewer instances of extension to another lobe in the penicillin-treated cases. When sulfadiazine is chosen first, one should be ready for a quick shift to penicillin in the event of sulfonamide failure.

Viral pneumonia does not respond to sulfonamides, and but erratically to penicillin. Reimann[23] bemoans the use of sulfonamide compounds in viral pneumonia as a means of differentiating the disease from bacterial pneumonia. The question as to the use of penicillin in viral pneumonia is unsettled, partly because the true etiology is not known. If it be an ornithosis, there is reason to expect some sensitivity to penicillin if one can believe that in vitro studies[7] are applicable to human infection. Clinically, Short[25] found the results in nine cases treated with penicillin to be superior to the results of symptomatic treatment alone. Kinsman et al.[21], on the other hand, matched 40 cases treated with 40 controls and found no appreciable difference in the clinical course.

An interesting situation occasionally arises when granulocytopenia develops in the course of a disease being treated with sulfonamides[26a]. The enigma facing the physician then is: did the disease or the sulfonamide produce this blood picture? In the pre-penicillin days it took courage to decide against the disease as the cause, and to continue the sulfonamide, perhaps even push it. This difficult decision is now seldom encountered, since the majority of diseases which yield to sulfonamides are also sensitive to penicillin. The physician can now switch to penicillin at the first indication of failure of the bone to produce myeloid elements, provided, of course penicillin is known to be effective against the disease being treated.

ADVANTAGES AND DISADVANTAGES OF SULFONAMIDES AND PENICILLIN—A COMPARISON

Granted that one is about to treat a disease for which sulfadiazine and penicillin are thought to be equally efficacious in the form and dosage in use today, the factors to be considered in deciding which agent to prescribe are the ease of administration, the toxicity, the possibility of encountering a resistant strain, and the assurance that an adequate amount of drug will be absorbed to control the disease.

For the patient who is conscious and able to take medication by mouth, the sulfonamide compounds are undoubtedly the most convenient to administer. Adequate blood levels can usually be achieved without upset, but one must always consider the possibility of nausea and vomiting produced by the drug, or even anorexia, as a factor in retarding recovery by tending to place the patient in a negative fluid or nitrogen balance or both. That penicillin will some day be administered as freely by mouth as are the sulfonamides is indicated by an increasing number of articles[11,26,27,28, 29] in the literature describing oral preparations and the blood levels attained after their ingestion. The danger of oral penicillin at present lies in relying upon the attainment of an adequate blood level with what is thought to be proper dosage. Absorption of penicillin from the gastrointestinal tract varies greatly in different individuals, and as yet there is no way of predicting which patient will absorb enough and which one won't. Until then, it is decidedly unsafe to use oral penicillin in diseases where a patient's life is in jeopardy at all times during the course of the disease; this includes particularly meningitis, pneumonia, septicemia, endocarditis, peritonitis, and gas gangrene.

When considering toxicity, the odds are rather heavily against the sulfonamides. Suppression of the blood-forming tissues is a constant danger; oliguria, and even anuria, from crystallization in the renal tubules, pelves, and ureters[30] must be watched for; and the development of natural and acquired allergic sensitivity[31] is occasionally serious. Penicillin, on the other hand, is producing fewer and fewer toxic and allergic reactions as the purity of the product is steadily improved. Reactions to penicillin consist of urticaria, asthma, arthralgia, edema of the glottis, and even an occasional death. A still unexplored and potentially hazardous effect on blood coagulation is hinted at in the death of two patients from hemorrhage while undergoing penicillin treatment for bacterial endocarditis, reported by Hines and Kessler[32]. This phenomenon may account for the fact that the results in treatment of subacute bacterial endocarditis with penicillin are as good without heparin as with it.

Sulfonamides have been in existence approximately twice as long as penicillin and thus have had more opportunity for the development of resistant strains. All indications are, however, that organisms will not develop fastness to penicillin on anything like the scale that they have developed against the sulfa compounds. Although it is known to occur[33], one is less likely, at the present time, to encounter a strain that has acquired marked resistance to penicillin.

Laboratory methods for the determination of blood levels are much simpler in the case of sulfonamides, and more informative because of the more sustained level than is the case with penicillin. This factor need not be considered when penicillin is administered parenterally. The peak level of penicillin is so transient that blood levels are seldom of interest or significance to the practitioner, who need only take pains to inject enough according to the recommendation laid down by research workers.

Given, then, a disease which is known to respond equally well to sulfonamides and to penicillin, the ease of administration, and perhaps the lower cost, are in favor of prescribing a sulfonamide; but the almost complete absence of toxicity or reaction, and the much less likelihood of encountering a resistant organism, are in favor of a decision to administer penicillin.

Discussion

Dr. J. W. Howard (Wilmington): I would like to compliment the essayist on the very fine paper. I enjoyed it tremendously.

I would like to emphasize a few points that he has rather ably brought out and which we see in the laboratory in evaluating these two different drugs. Hospital practice is one thing and practice on the outside is entirely a different thing, particularly when these two drugs are to be considered. Having seen the ravages of what the sulfonamides can do to the kidneys, we, in the laboratory shudder, sometimes, at the freedom with which they are administered on the outside, and I think the point is well taken that penicillin is much safer, from that phase. As a matter of fact, with the advent of oral penicillin, for the casual non-serious case, which is going to be the type of cases to be treated on the outside, it seems to us looking at this problem that oral penicillin will offer a great deal more to the general practitioner. The essayist has suggested that individuals be checked, to find what absorption is practicable. With some of the modern methods for testing for penicillin in the blood level, it is possible to determine whether, with 2 or 3 hours of the initial dose, the drug is appearing in the blood stream. Assuming it is there, we then have a relatively safe type to use on the non-hospital type of cases. Certainly in the hospital, there is little need for oral penicillin. There we can give intramuscularly, large doses and not have the question of who is to give it and how often one is to give it.

In the interesting article by Dr. Finland, he now indicated that penicillin may be given by just dissolving the average-used penicillin in saline, if given before the meal. Up to this time attempts have been made to neutralize the penicillin in the stomach, by drugs such as aluminum hydroxide or one of the citrates, and of course, as the essayist indicated, many observers, and we, in the local area, can prove this drug will pass through the intestinal tract at satisfactory tract. But certainly for the outside physician, I see oral penicillin as superior to sulfonamides because we no longer have to worry about the frightful outcome of either toxicity to the tubules or complete plugging.

Dr. E. R. Miller (Wilmington): I would like to throw out just a word of warning regarding the use of both of these drugs. It seems to be the tendency in practice when the patient gets a fever for two or three days, and does not improve, to administer one of these two drugs. There seemed a while ago to be a little epidemic of the virus pneumonia, and it seemed that on coming into the hospital, immediately the intern in many cases, ordered penicillin or sometimes a sulfa drug, without realizing the expense of the drugs, particularly penicillin—because if you have ever had the occasion to pay, yourself, the hospital bill, which I have had to do in the cases of a distant relative, after using a long course of penicillin, I think, sometimes, the physicians will think twice before they are promiscuously used.

But, nevertheless, and that is especially true of oral penicillin, where the present rate I think is $6.00 for 12 tablets—and I saw one hospital charging $9.00 for 12 tablets—those things have to be considered. But in the virus pneumonias, I know that many years ago many of us with experience did not call it virus pneumonia—we called it probably a summer grippe or trachial bronchitis, and gave aspirin and soda and plenty of fluids and the patients recovered in three or four days or probably it was a week or two. If it was a couple of weeks, it would probably be a severe case of trachial bronchitis. I think we forget that even before these new drugs were discovered our patients did many times get well, and for practical purposes for an intern to promiscuously use these drugs, without an effort, particularly in the hospital, to make a correct diagnosis, I think often gives us a false sense of security. Not only that, it tends to thwart the making of a diagnosis, a particular skill which the intern should try to develop.

A simple rule is to have a white blood count done, and if the count is low many times this special expense for drugs can be saved, and the patient, I believe, will invariably get well, or just as well with aspirin and soda or some other alkaline.

I had an experience recently in Rosemont, of two specific examples. A physician asked me to see a case that had been running a temperature for quite some time. He had used the sulfa drugs for a time and then he had switched to penicillin by mouth, and the diagnosis of the case was acute rheumatic fever which, of course, responds to neither drug. The use of the sulfa drug in the case of the rheumatic fever is contraindicated, as shown by the work of Dr. Jones at the Samaritan Hospital, where those cases receiving the sulfa drugs did not do nearly as well as those receiving no sulfa drugs. This case, where both sulfa drugs and penicillin had been used, responded to large doses of sodium salicylate, the temperature receded immediately, and the child improved. It does not alter the rheumatic fever, but helps symptomatically.

The other case, a colored man, was admitted to the hospital, and the intern again ordered penicillin without getting the history in detail, but after finally questioning the man found he had been sick two or three weeks. He had a temperature of 104, and it turned out to be an active case of tb., with a cavitation of the right apex.

So I do not think we should take the attitude of "Here we have two drugs which will cure most everything we have ever heard of" without carefully going over each case, specifically trying to make a correct diagnosis. At least we can afford in most instances to spend a day or two to do that, thereby many times saving the patient expense and sharpening our own diagnostic acumen, as well as practicing medicine more scientifically.

DR. BRUCE BARNES (Seaford): I should like to ask if the speaker has had any experience of treatment through intrathecal medication by penicillin?

DR. LUECK: In answer to Dr. Barnes question, I have no control series of tests, and I know of none.

As to the oral penicillin, it is on the market now, and for those planning to use it, the dosage is considered to be approximately five times that when penicillin is given parenterally. I would like to emphasize again, there are some diseases where a serious crisis must be passed and where oral penicillin should not be relied upon to cure the patient. If oral penicillin is going to be used, parenteral penicillin should be used first, for perhaps four or five days until the patient passes the critical stage and then that can be tapered off with oral penicillin.

SUMMARY

In this paper, an attempt has been made to provide a practical therapeutic guide of the diseases which (a) are best treated by one of the sulfonamide compounds, and (b) those for which penicillin is preferable. The relative merits of the two types of agent are discussed, with the intention of clarifying the issues which mitigate for or against sulfonamide or penicillin when doubt arises as to which to administer.

The views and ideas contained in this article are those of the author and do not necessarily express the opinions of the U. S. Navy Medical Department.

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GASTRO-JEJUNO - COLIC FISTULA*

A Case Report

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This case is reported to add to the growing literature on the subject. Only by the report of all cases coming to surgery, the compilation of such reports, and the evaluation of the summated literature may we reasonably expect successful surgical attack on this extremely serious condition without forbidding mortality. Reporting failures is as important as to chronicle cases with a successful result, for needless to say, only by acknowledging errors and avoiding them in future instances can progress be made.

The disease carries a grave prognosis without operation, and the mortality prior to the development of new methods of surgical cure has been so high as to cause surgeons to attack the lesion with pessimism. Verbrugge reported five postoperative deaths in twenty cases with a 25% mortality, Loewy 27% in 63 cases, Allen 25% in 8 cases, and Lahey and Swinton 63% in 8 cases. Without operation, progressive malnutrition, a wretched existence, and early death from perforation, hemorrhage or inter-current disease may be expected.

In an excellent review of 18 cases operated upon at the University of Michigan Hospital from 1925 to 1944, Ransom presented the factors in the incidence, etiology, pathogenesis, symptomatology, and treatment of the disease. In two series quoted the incidence of gastrojejunocolic fistula complicating marginal or jejunal ulcer was 13.6% and 17%. The incidence of marginal ulcer, as quoted by Lahey and Swinton from the literature, varies from 0.4% to 19% in different series. Ransom pointed out that gastrojejuno-colic fistula occurs almost invariably as a complication of a marginal or jejunal ulcer at the site of gastro-enteric anastomosis for duodenal ulcer, and most frequently following simple gastro-enterostomy rather than when this procedure is combined with gastric resection. It almost always follows upon short-circuiting procedures for ulcer, and is almost unheard of when the same operation is performed for carcinoma. It is rare in women. Being a lesion which is more or less man-made, the age of the individual patient is roughly proportional to the age at which gastro-enterostomy was done. The youngest patient in the series was 31, the oldest 72 years of age. Some length of time is required by the acid of the gastric secretion to produce ulceration at the stoma and fistula formation. The longest interval was 26 years, the shortest one year, and the average 9 years and 6 months between the time of the primary operation and the onset of fistula symptoms. The average duration of illness at the time of admission was about one year.

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* From the service of Dr. J. G. Spackman, Memorial Hospital.

Ransom stated that the diagnosis is usually not difficult, and often can be suspected from the history alone. The patient, usually a male, has had an ulcer history treated by posterior gastro-enterostomy, possibly with relief of symptoms for months or years. Recurrence of symptoms suggestive of ulceration of the stoma occurs in some cases, though of the 18 patients reported in Ransom's series only one-third had this sequence of events, the remaining 12 presenting themselves with symptoms referrable to a formed fistula.

Diarrhea is the most prominent and distressing symptom and the condition which causes the major portion of the weight loss and debilitation of these patients. It may be the only complaint, but usually abdominal pain, nausea and vomiting, flatulence and foul eructations with fetid odor are described. Ransom mentions that blood is frequently noted in the stools, either red or tarry, and usually at the onset. This observation presumably is made at the time when perforation into the colon actually occurs. He quoted Pfeiffer, who postulated the concept that the diarrhea is due not necessarily to dumping of food from stomach into colon, but rather to hypermotility of the small intestine induced by the irritating colon contents which flow into the jejunum. Vomiting and fetid eructations are probably the second most common of the complaints of these patients, and probably the vomiting contributes to the alkalosis which is commonly found. Nine of Ransom's cases gave vomiting as a serious complaint, and four without vomiting had definite fetid eructations.

Weight loss is almost constant, the greatest in Ransom's series being 60 pounds with an average weight loss of 33.3 pounds.

Pain is frequently present. If preceded by pain from marginal ulcer, it simulates ulcer pain but is more resistant to medical treatment and tends to locate somewhat below and to the left of the umbilicus. If pain is due to the fistula per se, it tends to act like other colon lesions, namely lower abdominal in location and cramping in nature. It may be due to scar constriction of the colon or it may produce symptoms of small bowel obstruction by cicatrization of the jejeunum. Also, independent loops of small intestine may become adherent and produce symptoms.

Physical examination usually adds little except for infrequent instances of a palpable inflammatory mass with tenderness. Nutritional edema may occur from hypoproteinemia. Ransom quotes Atwater, Butt and Priestley as noting this finding in 10 of 40 patients.

Laboratory studies usually reveal moderate to marked anemia, hypoproteinemia, avitaminosis C and hypoprothrombinemia.

The diagnosis is secured by x-ray study, and fluoroscopic visualization of barium entering the stomach from the colon, or vice versa, is pathognomonic.

Pre-operative treatment, which is of paramount importance, consists of correction of dehydration, anemia, alkalosis and avitaminosis. Ransom mentions sulfasuxidine as a possible additional protective measure.

In describing briefly the various procedures used, Ransom refers to one-stage disconnection and restitution of normal anatomy; Allen's aseptic operation, applicable to small fistulae, but lending itself less well to larger defects; Findley's multi-stage operation, utilizing the Mikulicz principle, exteriorizing the jejunal stump attached to the involved loop of transverse colon, and subsequently removing them; Scrimger's procedure; Estes' procedure; and more recently the two-stage procedures of Lahey and Marshall, and of Pfeiffer and Kent. These latter two will be discussed later.

The importance of pre-operative preparation is brought sharply into focus in a review by Gray and Sharpe of 49 cases of gastrojejuno-colic fistula operated upon at the Mayo clinic from 1930 to 1939, inclusive. Of the 49 cases, all of whom had one-stage procedures, there were 18 post-operative deaths, a mortality rate of 36.7%. The cases were divided into three groups. Group I consisted of 13 patients, (12.5% of the series) who appeared in good condition on admission. Blood chemistry studies revealed no abnormality in 11 cases, and none showed clinical avitaminosis, though 5 had either edema of the ankles or abdomen. The average hospital stay before operation was less than two and a half days. No attempt was made to give low residue diets, clean the colon with enemas, or replace vitamin stores. Only three were given intravenous fluids pre-operatively. Eight of the 13 died after operation (a mortality rate of 61.5%). Nearly half (44.4%) of the deaths of the entire series were in this group. Group II consisted of the remaining 36 patients, who were considered to have been more thoroughly prepared for operation. Ten died, a mortality rate of 27.7%. The average pre-operative hospital stay was 7.7 days. Patients were not operated upon until blood chemistry was restored to normal. Vitamin supplements, cleansing enemas, peritoneal vaccination and pre-operative intravenous fluids were given to the majority of these patients. Group III consisted of 7 patients who were also included in Group II, and were classified separately because their condition on admission was the worst of the entire series. In this group there was only one post-operative death. All were emaciated, six had marked dependent edema, and low vitamin C levels were found in three. The pre-operative stay in hospital was slightly more than 9 days, with glucose-saline solution administered in quantities of at least 2,000 cc. per day, colonic irrigations morning and night, low residue diets, and intensive vitamin therapy.

In summary, it may be interpreted from the facts presented in this paper that the operative mortality in this series seemed to depend on meticulous pre-operative preparation rather than upon the general condition of the patient at the time of admission.

In regard to surgical technique as related to gastro-jejuno-colic fistula, one phase may be looked upon as prophylactic. In the performance of gastro-enteric anastomosis for ulcer, entero-enterostomy and pyloric exclusion operations should be avoided. The former procedure shunts the neutralizing alkaline duodenal contents away from the stoma leaving the stoma unprotected against acid gastric juice. The latter operation permits continuation of corrosive action of gastric acidity on the duodenal or pyloric ulcer. The anastomosis in posterior gastro-jejunostomy should be made through a window in the transverse mesocolon which is near the ligament of Treitz rather than near the colon. Selection of patients for this type of operation should be made with the most rigid restrictions. As Pfeiffer and Kent say, "It is agreed that gastro-enterostomy in the young, asthenic, hyperacidic, hyperkinetic type of individual is unwise, because of the danger of subsequent ulcer occurring at the stoma." Lahey has long been an advocate of anterior gastro-jejunostomy since with this procedure fistula formation is less likely.

In the surgical attack upon an established fistula, many different methods have been used. Coller reported 11 consecutive cases without death using Allen's aseptic technique. In Ransoms series 6 different procedures were used. Two of the latest improvements in techniques have been brought forth by Pfeiffer and Kent, and by Marshall, describing Lahey's technique.

Pfeiffer and Kent recommended ascending colostomy as a first stage procedure. They base their claim on the concept that the diarrhea which causes the severe depletion of these patients is caused by hypermotility of the small intestine due to the presence in its lumen of irritating fecal material from the transverse colon rather than by the dumping of stomach contents into the colon. Partial proof is afforded by roentgenologic studies which reveal that barium from the stomach usually passes into the colon rather slowly even in large fistulae, while barium enemas usually pass readily into the stomach. In a questionnaire on 15 cases operated upon by 14 surgeons including Pfeiffer himself using this technique, there was a fatal result in only one case, a mortality rate of 6.6%. In his paper on surgical treatment of gastro-jejuno-colic fistula he points out that operative death is usually due to shock, peritonitis, pulmonary complications, leakage, usually from the repaired colon, embolism and hemorrhage. Preoperative measures recommended by this author include whole blood and especially plasma transfusions, high vitamin, high protein, high caloric diet, bed rest, opium derivatives to reduce intestinal motility and antidiarrheal agents such as bismuth and kaolin.

The point is made that some patients cannot be rehabilitated by any means of non-surgical nature as long as the fistula is active. He therefore recommends preliminary ascending colostomy which achieves alleviation of symptoms in almost all cases with re-establishment of normal nutrition, and the subsidence of the inflammation, edema and infection about the fistulous area. The second stage procedure therefore finds the patient not only in better general condition, but the local lesion more amenable to surgery.

Lahey's plan as described by Marshall has a somewhat similar principle, the first stage procedure being ileo-descending colostomy and the second stage radical resection of stomach, ascending and transverse colon with gastrojejunostomy. It carries the advantage of removal of acid secreting stomach as part of the second stage though this may also be accomplished following the first stage of Pfeiffer's plan. With the method described, Marshall reported one death in 14 cases with a mortality rate of 7.1%.

Case Report

Case No. 34454, J. A. K., a 50-year-old white male postal clerk, was admitted to the Memorial Hospital on 1-2-46 with a chief complaint of diarrhea. He had had a gastro-jejunostomy in 1934 after four years of symptoms referrable to duodenal ulcer. Cholecystectomy had been done several years previously. Following gastro-jejunostomy he had been symptom-free, eating what he chose, and smoking heavily. About one year prior to admission, on arising in the morning, he experienced a sudden, severe, stabbing pain in the left upper abdomen which "felt as if something gave way." He felt weak and faint, had the urge to stool and passed a large bowel movement containing dark and fresh blood. This was the only time blood was noted in the stool. Following this he developed a mild diarrhea, which at no time exceeded five stools a day, and he lost approximately 20 pounds in weight. He vomited only three times in the interval, the vomitus consisting of foul-tasting material. Fetid eructations occurred frequently. At no time did the condition force him to stop working.

Barium enema studies were done by his physician because of his complaint of diarrhea. The contrast medium was seen under the fluoroscope to enter directly into the stomach from the colon. X-ray studies gave additional evidence of an abnormal shunt between the stomach and colon.

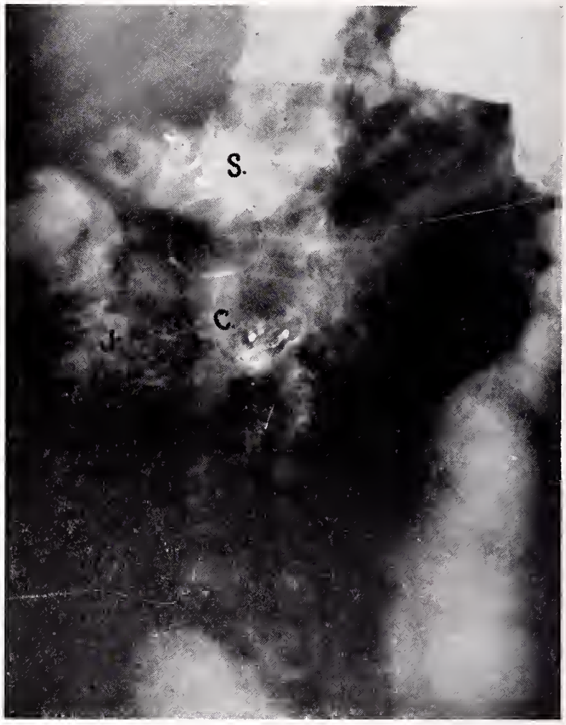

Fig. 1 — BARIUM ENEMA. S, stomach; J, jejunum; C, colon. Fistulous tract encircled.

On physical examination the essential findings were as follows; Scars of previous operations; coarse inspiratory rales at both bases with no other findings indicative of pulmonary pathology, blood pressure 114/70; no clinical signs of avitaminosis, and no edema. The patient appeared to be in quite good general condition despite the duration of symptoms referable to his lesion.

Laboratory data: RBC, 5.08 million; hemoglobin, 14.5 gm. per cent, or 86.4%; color index, 0.86; WBC, 7,600; mature neutrophils, 61%; young neutrophils 2%; lymphocytes, 29%; monocytes, 2%; eosinophils, 2%.

Urinalysis: color, yellow; reaction, neutral; specific gravity, 1.007; albumin, sugar and acetone, negative; sediment, essentially normal. Blood urea nitrogen, 12 mg.%; blood chlorides, 460 mg.%; plasma proteins, 6 gms. per cent.

Operation was performed 1-4-46 (third hospital day). Pre-operative treatment consisted of a low residue diet on the day of admission, with a liquid diet on the day preceding operation. One dram of paregoric was given every 2 hrs. for five doses up to the time of operation. Colonic irrigation was deliberately omitted because it was felt that the difficulties which might be caused by liquids in the hollow viscera involved in the operation would offset the advantages of the cleansing action of enemas.

The operation was performed under continuous spinal anesthesia, using a total of 44 mg. of pontocaine. 50 mg. of ephedrine were given intramuscularly in divided doses during the operation. During the procedure 2,500 cc. of 5% glucose in physiologic saline solution and 1,000 cc. of citrated blood were given intravenously. The procedure lasted 5 hours and 55 minutes. The surgeon's operative record is reproduced here verbatim:

Operation. Pre-operative diagnosis: gastro-jejuno-colic fistula. Operation: Takedown of old gastro-jejunostomy; resection of 8 cm. of afferent and efferent jejunal loops; resection of 8 cm. of transverse colon; end-to-end anastomosis of afferent and efferent jejunal loops; closure of gastric defect, jejunostomy, obstructive resection of colon. Findings: There was a 5 cm. opening between the jejunum and the colon. With the exception of an area ¾ cm. in diameter, the anastomosis was smooth and without inflammatory excavation or induration. The jejenum and transverse colon were firmly fixed to the under surface of the transverse mesocolon. Technique: Incision beginning at the ensiform and extending below and to the left of the umbilicus. The stomach was dissected free of the fistula. The opening in the stomach was closed with a running mattress suture supplemented by a row of interrupted mattress sutures of No. 0 catgut. Eight cm. of the jejunum and of the colon were resected. An end-to-end anastomosis was made in the jejunum, the first and last rows being of fine black silk, the inner rows being of No. 000 catgut. The colon was resected, an obstructive Rankin resection being done. Thirty cm. below the point at which the jejunum was anastomosed, a jejunostomy after the method of Witzel was done, and brought out through a stab wound to the left of the operative incision. The area at which the catheter emerged was fastened to the anterior parietal peritoneum with two sutures of fine black silk. Five grams of sulfanilamide and sulfathiazole were sprinkled in the operative area. The wound was closed with through-and-through heavy silk sutures, supplemented by No. 1 chromic catgut in layers in the fascia, with interrupted vertical mattress sutures of fine silk in the skin.

Pathologic report: Tissue from stomach, jejunum, and transverse colon. Gross: Roughly circular piece of stomach about 8 cm. in diameter containing two sets of closely adjacent openings. Two of these openings are into the jejunum and the other two are into colon. Between one of the jejunal and one of the colon openings there is a superficial ulceration of the gastric mucosa. Elsewhere, the mucosa is intact and the underlying tissue around the four openings is involved in scar tissue. Microscopic: A section through the ulcer shows the typical structure of peptic ulcer with desquamation of the mucosa and the floor covered with fibrinous exudate and granulation tissue. Beyond this, there is scar tissue. Diagnosis: Marginal ulcer; gastrocolic fistula.

The post-operative course was stormy from the onset. The patient had an immediate elevation of temperature and ran high fever which lasted until death on the twelfth post-operative day, reaching 105.4 degrees F. on two occasions and again terminally. Cyanosis was present throughout and never yielded completely to oxygen therapy, frequent turning, and forced coughing. The patient coughed a great deal, though weakly, and brought up large quantities of yellow green sputum. Bilateral moist crepitant and subcrepitant rales were heard at the bases on the third day, and by the fifth day were heard throughout both lung fields.

On the third post-operative day the patient went into deep shock, the blood pressure falling precipitously, the pulse becoming thready and barely perceptible, cyanosis being marked and delirium present. This responded very promptly to intravenous infusions of 1500 cc. of saline, 900 cc of plasma and 500 cc of whole blood. 2500 cc. more of saline were administered the same day. Despite the large quantities of salt administered and the scanty urinary output, the blood chloride determination the following day was only 460 mg. %. On the basis of these findings it is felt that the shock state was due to chloride depletion, due probably to constant gastric suction, jejunal drainage, and excessive perspiration. On the fourth post-operative day blood urea nitrogen was 74 mg. %, creatinine 4.4 mg. %, blood chlorides 460 mg. %, and plasma proteins 8.2 gms. %. From the results of these determinations, it is apparent that prerenal azotemia as well as hemoconcentration was present, and that the blood chloride determination though apparently within normal limits actually represented a low absolute value. The nitrogen retention yielded to intravenous therapy, so that the blood urea nitrogen determination was 28 mg. % on the tenth post-operative day.

Penicillin, in doses of 30,000 units every three hours, was given intramuscularly throughout the post-operative course.

Throughout the post-operative storm, the patient's abdomen remained negative to physical examination. On the third post-operative day, the Rankin clamp was removed and a large liquid stool was passed late in the evening of the same day. Peristalsis was audible on the fourth day post-operatively, and the semi-formed stool was passed on the seventh post-operative day.

All supportive measures failed, and the patient expired on the twelfth post-operative day. The medical consultant felt that the high maintained fever could not be explained on the basis of bronchopneumonia alone. An Rh determination was therefore done on the day of death and the patient found to be Rh-negative.

PATHOLOGIST'S REPORT

Clinical Diagnosis—

1. Recent operation
2. Hypostatic pneumonia

Anatomical diagnosis—

1. Recent repair of gastro-colic fistula
2. Bronchopneumonia

Subsidiary diagnosis—

1. Scars of previous operations:
    a. Gastro-jejunostomy
    b. Cholecystectomy
    c. Appendectomy
2. Steatoma of shoulder
3. Fibrous pleural adhesions.

The body is that of a well developed and well nourished adult white male, 160 cm. long. There is no rigor mortis and very little lividity of the dependent parts. The eyes, ears, nose, and mouth are not remarkable. Pupils are round, regular, and equal, each measuring 0.6 cm. in diameter. There is a left rectus incision 22cm. long with a colostomy opening in the mid-portion. A stab wound is present in the left lower quadrant and through this wound a catheter passes into the jejunum. There are two longitudinal right rectus scars over the general vicinity of the gallbladder and another scar over the vicinity of the appendix. The left hand is edematous. An encapsulated cystic mass 3 cm. in diameter is present in the skin over the left clavicle. This cyst contains greasy material.

Peritoneal Cavity: There are several adhesions beneath the scars of the old operation wounds and especially in the vicinity of the gallbladder bed and the ileocecal region. More recent adhesions are present beneath the recent left rectus incision where a gastro-colic fistula has been excised, the continuity of the jejunum from a gastro- jejunostomy has been restored, and a new jejunostomy with the insertion of a rubber catheter has been created. Elsewhere the peritoneal surfaces are smooth and glistening and there is no free fluid.

Pleural Cavities: The surfaces on both sides are extensively covered with fibrous adhesions.

Pericardial Cavity: Surfaces smooth and glistening. There are no adhesions or excess of free fluid.

Heart: 325 grams. Normal in size, shape, and position. Dissection of the organ shows no evidence of pathology.

Lungs: The left weighs 600 and the right 690 grams. The dorsal half of the lung on each side is acutely involved in small lesions slightly firmer than the surrounding lung tissue and remaining slightly raised above the general surface on section. Very little fluid is scraped away from these surfaces, but it consists partly of gray material interpreted as pus. The tracheobronchial mucosa is slightly congested. The tracheobronchial lymph nodes are normal.

Spleen: 75 grams. Normal in size, shape color, and consistence.

Pancreas: 110 grams. Normal in size, shape, color, and consistence. There is no scar tissue involving the organ.

Liver: 1,720 grams. Normal in size, shape, and position. The diaphragmatic surface is slightly roughened with fibrous adhesions. Multiple sections through the liver show normal red-brown liver substance without prominence of the markings. The gallbladder is absent and the gallbladder bed contains an abundance of scar tissue.

Gastro-Intestinal Tract: The esophagus is normal. The gastric musosa is hypertrophied. A portion of the stomach has been resected from the greater curvature proximal to the pylorus. The line of suture is intact and appears to be in a normal condition of early healing. A portion of proximal jejunum, formerly incorporated in a gastro-jejunostomy, has been resected and the continuity of the jejunum restored. This wound also appears to be in a satisfactory condition, although there is a small area of necrosis in some of the adjacent fat. At a more distant point in the jejunum, a rubber catheter has been inserted into the lumen and extended through a stab wound in the left lower quadrant. There is no evidence of leakage around this wound. The ileum appears normal. The appendix is absent and scar tissue is present in its place. A mid-transverse colostomy recently performed is in a satisfactory condition and there is no evidence of leakage. The sigmoid and rectum are normal.

Adrenal: The medullary portion is friable.

Urinary Organs: The kidneys are similar and are approximately normal in size, shape, and position. The capsule is thin and strips spontaneously from a normal smooth gray surface. The color is somewhat paler than normal and the cortex averages 0.7 cm. in thickness. Calices, pelves, ureters, and bladder are normal.

Genital Organs: Grossly normal.

Aorta: Smooth and elastic throughout.

Microscopic: Heart—normal. Lungs—the bronchi and the immediately surrounding alveoli are frequently filled with purpulent exudate and fibrin. The blood vessels are congested. Spleen—normal Pancreas—normal Kidney—There is slight edema and the tubules occasionally contain hyaline casts.

Comment

In reviewing this case in an attempt to determine how a fatal outcome could have been avoided, several features present themselves. Despite the normal findings in blood chemistry determinations on admission, it must be kept in mind that in chronic malnutrition total circulating blood volume, and therefore total blood proteins and chlorides may be seriously depleted although the concentrations of these constituents appears to be within normal limits. That this may apply to the case presented seems to be a logical conclusion in view of the fact that the patient's red blood count was over 5,000,000 on admission, denoting a degree of hemoconcentration. This may account for the low resistance of the patient to his pneumonic infection and his postoperative hypochloremia.

It is noteworthy that this patient was considered to be in surprisingly good condition on admission, and was therefore operated upon the third hospital day. He would no doubt have been included in Group I of Gray and Sharpe's reported series. More intensive and prolonged preparation was probably indicated. The significance of the basal rales heard on admission should have been more intensively studied and treated if possible. It is difficult to evaluate the importance of the finding that the patient was Rh-negative.

Summary

A case of gastro-jejunocolic fistula is reported. An attempt is made to determine where errors of omission and commission may have contributed to the fatal outcome. A summary is made of recent literature on the subject.

Indebtedness is gratefully acknowledged to Dr. James G. Spackman and Dr. Joseph Attie for invaluable assistance in preparation of this report.

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SURGERY IN THE TREATMENT OF ACUTE MASSIVE HEMORRHAGE FROM PEPTIC ULCER[*]

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Since 1931, when Finsterer[3] focused attention on the subject, much has been written about the role of surgery in the treatment of patients undergoing critical massive gastric hemorrhage. It is our purpose to comment on selected articles and to present a recent case successfully treated by surgery.

In a comprehensive survey at the Knickerbocker Hospital, Bohrer[1] outlines a regime for management of acute massive hemorrhage, in which the diagnosis of bleeding peptic ulcer can be made with reasonable certainty, and compares the results of conservative and operative treatment. A blood count of less than 2,000,000 red cells and less than 35% hemoglobin was the arbitrary criterion for massive hemorrhage.

General management, as outlined by Bohrer, consists in: (1) frequent pulse rate and blood pressure readings; (2) immediate treatment of shock if present; (3) passage of a Levine tube at the earliest possible occasion for gentle lavage of the stomach; (4) optional use of roentgenologic examination; (5) immediate typing and cross matching of blood donors and obtaining a large reserve of compatible blood; (6) a bland acid-neutralizing diet. Emphasis is placed on the value of the Levine tube, both for diagnostic value in promptly indicating the recurrence of fresh blood in the stomach, and in overcoming the nausea and vomiting which result from large amounts of blood and clots in the stomach. If there is clinical evidence of continued bleeding, a transfusion is given promptly. A further drop in the red cell count after transfusion is considered an indication for surgery.

Comparing the mortality of Bohrer's cases of acute massive hemorrhage treated conservatively with that of similar cases treated by subtotal gastrectomy during the course of active bleeding (see Table I) shows that patients in the older age group had a better chance of recovery if treated by subtotal gastrectomy, particularly if the bleeding were duodenal in origin, while the patients in the younger age group did much better when treated conservatively.

Bohrer concludes that in selected patients 45 years and older with acute massive hemorrhage of duodenal origin, gastrectomy is the operation of choice. Early operation before repeated exsanguination occurs is essential for lowered mortality, and the use of a regime including supportive therapy, transfusion, and the Levine tube are valuable adjuncts.

Pfeiffer[6] emphasizes that the mortality is much greater during the second and third episodes of hemorrhage than during the first episode, giving mortality of 2½% to 5% for patients operated upon within 24 hours of the first hemorrhage, contrasted with 31% for patients operated late during massive hemorrhage. He favors conservative surgery; i. e., gastro-duodenotomy rather than gastrectomy during the period of active bleeding. Cases of duodenal ulcer are more likely to be benefited by immediate surgery than are cases of gastric ulcer. Careful selection of cases and cooperation with the medical man in auxillary treatment are important adjuncts.

Payne[5] comments on the usefulness of surgery in the treatment of recurrent massive hemorrhage of ulcer origin, or treatment of any massive gastric hemorrhage in the presence of a chronic ulcer penetrating into the pancreas. Welch and Yunich[7] discuss the problem broadly, pointing out that by careful selection of cases among the elder age group for surgery many lives can be saved. The reader is also referred to the symposium

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[*] From the Department of Surgery, Memorial Hospital.

TABLE I

From the Knickerbocker Hospital

Mortality (%) in Patients with Acute

Massive Gastric Hemorrhage

	45 yrs. & older	Less than 45 yrs. old	
Treated by subtotal gastrectomy during period of active bleeding	26%	18.5%	Gastric Ulcers
Treated conservatively	27%	9%	
Treated by subtotal gastrectomy during period of active bleeding	14.5%	17.5%	Duodenal Ulcers
Treated conservatively	22%	6.5%	

of the *J. A. M. A.*[4] and to a later article by Finsterer[2] for further illuminating discussion.

CASE REPORT

No. 16533, admitted November 23, 1945, to the surgical service of James G. Spackman, M.D., and discharged January 1, 1946.

Chief complaint: Hematemesis and syncope.

History of present illness: The patient is a 48-year-old white man with a chronic ulcer history which includes two perforations and a gastro-enterostomy. During the two months preceding admission, his epigastric pain had been more severe than previously. Early on the day of admission, he felt weak and nauseated. At 6 a. m. he vomited a large amount of blood and clots, and fainted. During the afternoon his general condition improved, but late in the evening he felt weak again and at 10 p. m. he vomited more blood. He was admitted to this hospital at 11:30 p. m.

Past History: Patient first had symptoms of duodenal ulcer in 1923. In 1924 he was operated upon for closure of perforated ulcer. In 1928 he had a second perforation, following which he developed empyema and had a thoracotomy. In 1931 he had a posterior gastrojejunostomy. During the intervening years his symptoms persisted with remissions and exacerbations.

Physical examination: Revealed a restless middle-aged man who was obviously in a state of collapse. Temperature 97.5, pulse 160, respirations 25, blood pressure 70/50. Skin was warm, pale, and pasty in color. There was no perspiration. Conjunctivae showed marked pallor. Heart sounds were remarkable only for the rapid, regular rhythm. Lungs were resonant, with no rales. The abdomen was soft to palpation. There was a well-healed upper midline scar and a right thoracotomy scar.

Treatment: A Levine tube was passed immediately and yielded coffee ground material and blood clots. The patient was placed in Trendelenburg position, oxygen was administered by nasal catheter, intravenous fluids were started, and Wangensteen suction attached to the Levine tube. Morphia was given to allay restlessness. Simultaneously several units of frozen plasma were quickly thawed. The patient was typed and a large number of blood donations were prepared during the ensuing hours.

Course: By morning, following 900 cc. of plasma and 1,000 cc. of blood, the patient's general condition was good. He was given cracked ice and sips of water by mouth and the Wangensteen returns were clear. His blood pressure stabilized at 120/70 and the remainder of his first hospital day was uneventful. On the morning of the second hospital day he complained of feeling weak but appeared comfortable; color was good; blood pressure 115/65; pulse 100; and Wangensteen returns were clear. The morning laboratory work showed 3,700,000 red cells, 66% hemoglobin, 11,000 white cells, and a negative urinalysis. He was placed on a liquid diet including milk, and was given barbiturate sedation.

On the morning of the third hospital day, the patient was visited by the surgeon at 8:30 a. m. and his condition was unchanged at that time. At 9:30 a. m. the patient abruptly became restless. The Wangansteen yielded large quantities of fresh blood and the pulse became rapid. The blood pressure dropped to 70/50, profuse diaphoresis followed, the skin becoming ashen gray in color. Within 15 minutes a blood transfusion was running into one arm and glucose saline into the other. During the morning, the patient received 1,500 cc. of whole blood and 3 units of plasma. By 11 a. m. the general condition was improved, pulse 100, skin warm, and the Wangensteen return contained coffee ground material and clots, but no fresh blood. Preparations were made for operation, the supply of fresh blood again being replenished.

At 2 p. m. the patient had another massive hemorrhage, this time vomiting his Levine tube and a very large quantity of fresh blood. He was rushed to the operating room where he had further massive hematemesis. The pulse and blood pressure were completely unobtainable. Fluids, plasma, and whole blood were administered by means of a Kauffman-Luer rapid transfusion set under pressure (See Fig. 1). A total of 3,750 cc. (7½ units) of whole blood and 2,500 cc. of other fluids, including plasma and calcium lactate (to offset ill effects of citrate accompanying transfusion), were given in the operating room within a period of three hours. Pulse and blood pressure became perceptible during the operative procedure.

Operation: Anterior gastrotomy to locate bleeding marginal ulcer. Resection of 8 cm. of jejunum, including a deep marginal ulcer with a crater slightly over 1 cm. in diameter. Anastomosis of the proximal and distal segments, end to side. Closure of the opening in the posterior gastric wall where the previous gastro-jejunostomy was taken down. Closure of an anterior wall gastrotomy opening for digital exploration of the afferent and efferent jejunal loops. Jejunostomy.

Postoperative course: The patient's general condition after operation was good. Three weeks postoperatively he was having some gastric retention, but barium taken by mouth readily passed to the colon in one hour. Patient was discharged on his thirty-sixth postoperative day. Subsequent gastrectomy is contemplated.

Summary

Comment is made on recent interest in surgical treatment of massive gastric hemorrhage of ulcer origin and on general agreement that its chief value is in selected cases of patients of 45 years of age or older. A case is presented in which extensive operation was carried out successfully in the presence of acute recurrent exsanguinating gastric hemorrhage originating in a marginal ulcer. The procedure was well tolerated and was, with reasonable certainty, life-saving. Emphasis is placed on the importance of having large quantities of whole blood available and of giving it by rapid transfusion method when necessary.

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Due to improved methods of case-finding and more widespread knowledge about the disease, tuberculosis did not increase in this country during the war, though it rose to alarming proportions in Europe and Asia. Nevertheless, it is deplorable that tuberculosis took more than 205,000 American lives during the war years.—Harry S. Truman.

MYCOSIS FUNGOIDES

Report of Case With Clinical and Postmortem Findings*

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Wilmington, Del.

A case of mycosis fungoides is presented for review because of its interesting history and clinical picture, the relative rarity of the disease, and the downhill course of the patient after the onset of the tumor stage, in spite of partial regression of the lesions with deep x-ray therapy.

Case History

Mrs. A. G., white, female, age 47, was first seen in this hospital in August, 1929, for recurrent abdominal enlargement, a dragging sensation in right loin, and frequent urination. A subtotal hysterectomy, bilateral salpingo-oophorectomy and appendectomy was performed for papillary cystadenoma of the right ovary.

In January, 1936, the patient received superficial x-ray therapy (140 kv.2500r) in the Carpenter Memorial Clinic for a basal cell carcinoma of the forehead. At periodic check-ups she had no evidence of disease until seen again in Carpenter Memorial Clinic in June, 1941, because of a minute lesion in midline of lower lip. Nothing was done on this visit, and she was not seen until June, 1944, when a small carcinoma on the upper lip near the philtrum just above the vermilion border was excised under local anesthesia. The pathological report was squamous cell carcinoma of the face. In March, 1945, she had a recurrence of the lesion in the upper lip, and she was admitted to the hospital for excision of the left half of the upper lip and cheiloplasty. The pathological report was squamous cell carcinoma, grade 2, of lip.

Her next admission was in July, 1945, at which time she complained of generalized skin eruption, with extreme itching, of two months' duration. Further questioning disclosed that the skin lesions had been present for about three years, and had progressively gotten worse, but there had been some remissions and exacerbations. Previous to this admission the skin condition had been diagnosed and treated as psoriasis.

On examination the skin lesions were bright red, maculo-papular areas with indurated, edematous margins. The face and arms were covered more profusely than other areas. There was no evidence of secondary infection. There was a subcutaneous cystic mass about three cm. in diameter protruding from the midline of neck with evidence of pressure necrosis over the anterior portion. Mass was movable, smooth, and hard. The remainder of physical examination was within normal limits. There was no superficial adenopathy and no abdominal masses.

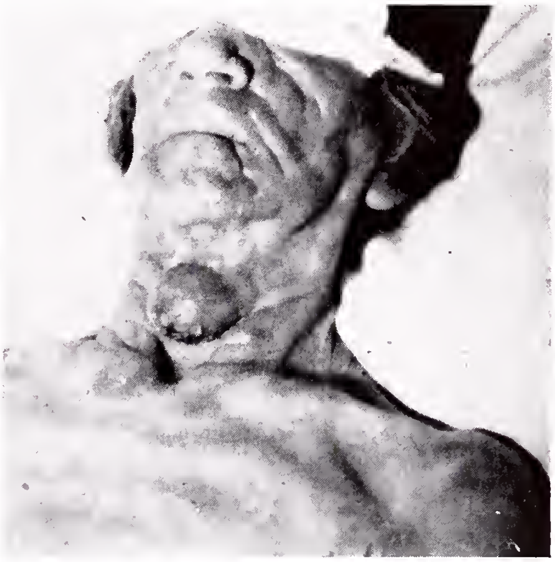

Fig. 1 — A. G., age 47, showing the subcutaneous cystic mass of the neck.

Admission temperature was 98.6° F., plus 88, respirations 24. The blood count was: RBC 3.55, WBC 6100, 10.5 gms. of hemoglobin. Differential showed 72% mature neutrophiles, 4% young neutrophiles, 22% lymphocytes, and 2% eosinophiles. Blood serology was negative. Urinalysis was within normal limits, blood urea nitrogen 18.mgm.%, and cholesterol 176 mgm.% Biopsy of mass in the neck was reported as lymphosarcoma of skin.

Hospital Course: She was a patient here from July 25, 1945, until her death on December 30, 1945. During this period she was given supportive treatment, along with small doses of deep x-ray therapy, which was started on August 3, 1945. The skin lesions at first responded well to x-ray therapy, becoming less in number and less marked. The skin at no time, however, was entirely free from the lesions.

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* From the Department of Medicine and the Carpenter Memorial Clinic, Memorial Hospital.

X-ray Therapy: The patient was given x-ray therapy to the entire body, which was marked off into four large segments, anteriorly and posteriorly, for treatment purposes. A daily dose of 25 to 50r was given to one segment, treating each area in rotation until about 200r had been given to the entire body. At this point leukopenia and purpuric manifestations made it necessary to discontinue general body irradiation. Thereafter, x-ray was given symptomatically, treating only the most prominent lesions (especially the face and head) and those over body prominences where pressure necrosis threatened.

Area of Body	Voltage	Filter	r
B-head and shoulders, anterior	200	0.5 cm.	600
C-thorax and upper 2-3 abdomen, anterior	200	"	75
D-lower abdomen and thighs, anterior	200	"	100
E-head and shoulders, posterior	200	"	100
F-thorax and upper 2/3 abdomen, posterior	200	"	100
G-buttocks and posterior thighs	200	"	500
H-lower legs, posterior	200	"	200
I -lower legs, anterior	200	"	200
J-hands and forearms	200	"	200
K-forearms and upper arms	200	"	400
L-right iliac, superior spine, center	140	none	900
M-right lateral thorax and axilla	140	none	900
N-left lateral thorax and axilla	140	none	900

B through K given in August and September; remainder in October.

On September 12 it was noted that the patient had developed marked petechial hemorrhages. Laboratory findings on this date were: normal prothrombin time, blood platelets 117,500, coagulation time four minutes, bleeding time 16 minutes, RBC 3,550,000, WBC 3,000, hemoglobin 52%. By September 21 there was a leukopenia of 1,350 and a hemoglobin of 37%. Blood platelets then were 28,100. Reticulogen 1 cc. was prescribed twice weekly for this condition.

In spite of the leukopenia, occasional x-ray treatments were given to the more prominent and painful lesions until the latter part of October. At this time many of the larger lesions underwent necrosis and ulceration, and there was a moderate generalized lymphadenopathy. Since the lesions no longer showed much regression from treatment, roentgen therapy was discontinued. The leukocyte count returned to normal after discontinuance of x-ray, the last WBC being 6100, with a differential showing a slight increase in lymphocytes. The blood platelets, however, never returned to normal, the last count being 19,350. Death occurred December 30, 1945.

Necropsy

The skin lesions described on admission were very extensive and confluent, covering almost the entire body. Many were extensively necrotic, particularly over bony prominences.

Lungs—Right greatly congested, weighing twice that of left.

Gastro-intestinal—Sigmoid portion contained numerous diverticuli.

Lymph nodes—Generalized lymphadenopathy, which on sectioning grossly appeared pale and firm.

Remainder of gross examination was normal.

Microscopic—Section from one of the skin lesions showed a massive infiltration of cells ranging from size of lymphocytes to slightly larger. Nuclei were round and stained solidly. This was consistent with lymphosarcoma of skin.

Lymph nodes—The tracheobronchial nodes were normal. All others showed solid infiltration by tumor similar to that in the skin.

Bone marrow—Markedly atrophic, with little evidence of blood formation.

Remainder of sections normal.

Anatomical Diagnosis—Mycosis fungoides.

Comment

Stratton[1] has had good results with the use of radioactive phosphorus (prepared in cyclotron). He has given two millicuries by mouth with a similar dose repeated in two weeks. His cases have shown a remarkable improvement in the skin eruption, particularly those cases in the premycotic stage. Perhaps this treatment, combined with x-ray therapy, would prove more beneficial in cases of mycosis fungoides than x-ray alone.

The disease, typically, runs a progressive course which may be divided into four stages: (1) general pruritis, (2) nondescript erythematous, eczematous, or psoriasiform eruptions, also called premycotic stage, (3) infiltrated plaques, and (4) tumor stage. Dostrovsky[2] reports a case in which he treated the symptoms of poikiloderma atrophicans vasculare as an initial symptom of mycosis fungoides and he classifies this as a premycotic stage of the disease. The disease, per se, may begin in any of the above stages, and exist without the others. Our case presumably had a long premycotic stage. The skin infiltration and tumor formations apparently began two months before admission. Review of the skin sections from the operation four months before admission showed no lymphosarcoma infiltration.

Summary

1. A case of mycosis fungoides is presented.
2. Mycosis fungoides may simulate psoriasis before it develops into the premycotic stage.
3. Two skin biopsies done before last admission were diagnosed as squamous cell carcinoma of the face, but no evidence of lymphosarcoma was noted.
4. It has been shown that the patient developed three distinctly different tumors during her lifetime; namely, papillary cystadenoma of ovary, squamous cell carcinoma of skin, and lymphosarcoma of skin.
5. It is believed that x-ray therapy is the treatment of choice. Evidence points to the possibility of the use of radioactive phosphorus for treatment of the disease.

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KAPOSI'S VARICELLIFORM ERUPTION[*]

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Kaposi's varicelliform eruption was first described in 1887 by Kaposi[1] as a complication of eczema. More descriptive names have been instituted since that time, but basically the original idea has not changed. Opinions vary as to the etiology, but all observers, according to Connor[2], agree that the clinical manifestations are characterized by fever and pustular umbilicated lesions superimposed on a previously existing eczema, usually infantile in type. This is brought out again in the case presented here.

Case Report

W. J., white, male, age 14 months, was admitted on September 27, 1945, as a case of infantile eczema, which was diagnosed on a previous admission to this hospital. Physical examination showed a child with extensive eczematoid dermatitis of the infantile eczema type. Large discrete umbilicated pustules, with inflammatory areolae, were present in some areas, particularly the face and extremities. There was marked inguinal and cervical adenopathy, bilateral. The heart and lungs were normal. Temperature 104° F. rectally. Accessory clinical findings were: RBC 4,550,000; WBC 18,400; hemoglobin 87%; and a differential within normal limits. Voided specimen of urine showed slight trace of albumin and 2-4 WBC/HPF.

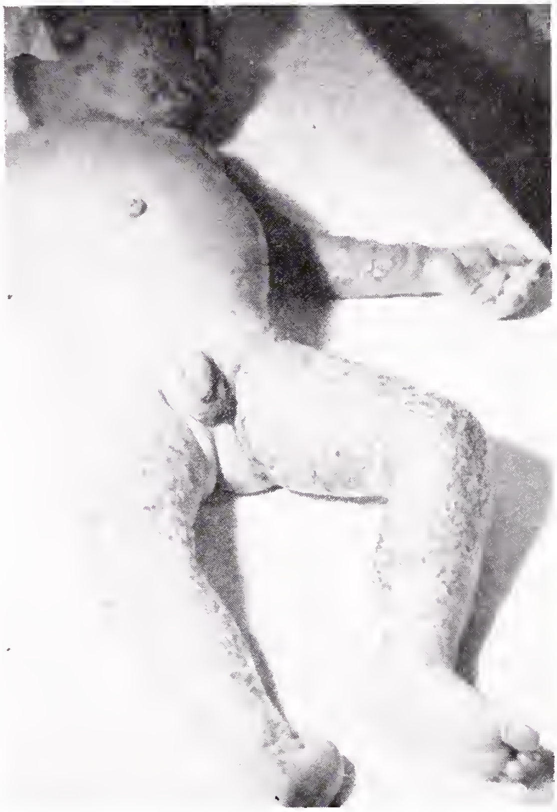

Fig. 1 — W. J., age 14 months. The skin lesions as they appeared on last admission to the hospital.

Hospital course—The child was placed on a SoBee diet, continuous Dakin's solution compresses, and oral penicillin in dosage varying from 8,000 to 15,000 units every four hours. After 72 hours there was little, if any, change clinically in the skin lesions, and the treatment was discontinued. On October 3 he had an acute toxic reaction, with his temperature rising to 106.3° F., with a peak of 108° F. rectally. Oxygen therapy was given for the extreme cyanosis and rapid, shallow respirations. Prognosis at this time was very grave.

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[*] From the Department of Medicine, Memorial Hospital.

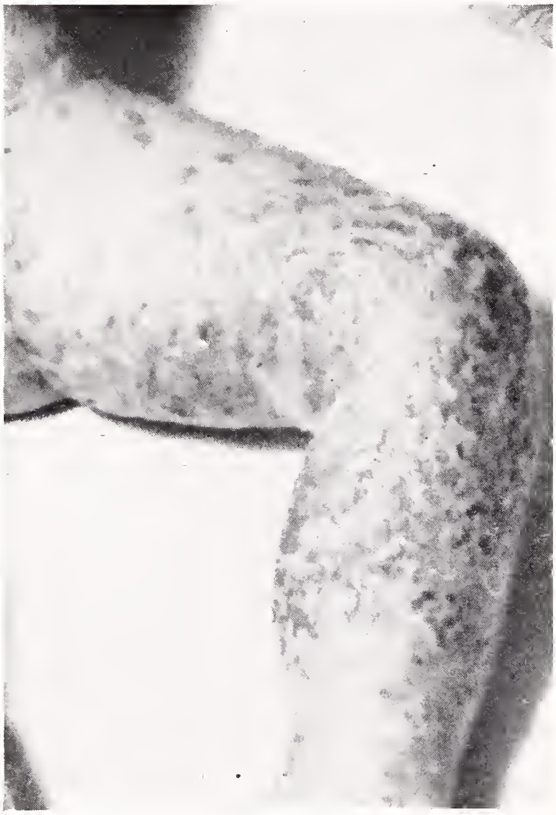

Fig. 2 — The same lesions, more highly magnified.

On the same date sulfonamide therapy was begun, in the form of sulfathiazole cream locally and sulfadiazine, 6.6 grams every four hours orally, and continued for eight days. Under this regime the tense pustules began to flatten, the inflammatory reaction lessened, and the appearance became that of any ordinary pyogenic dermatitis. At the same time there was a corresponding reduction in temperature. The WBC dropped from 60,000 to 15,000. Urinary output was always adequate, and no sulfonamide crystals or urinary casts were demonstrated. Satisfactory sulfadiazine blood levels, varying from 11.7 mgm.% to 5.2 mgm.%, were maintained on oral therapy. Staphylococcus aureus was isolated from the skin lesions. Blood culture during acute febrile course revealed no growth in five days. Convalescence was uneventful, and the child was discharged after 38 days in the hospital. All lesions were healed, but there remained moderate scarring about the face and neck.

Comment

A case of Kaposi's varicelliform eruption has been presented, occurring in a known infantile eczema subject. The pertinent points were the marked toxemia as evidenced by the extreme temperature of 108° F. rectally, a failure of response to penicillin, and the prompt improvement, resulting cure, with sulfonamide therapy. Connor[2] reports on three patients in which the sulfonamides were used. There was prompt and spectacular recovery in two of the three.

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Streptomycin

Streptomycin, one of the most promising of the new anti-biotics following on the heels of penicillin, was first extracted from an organism found in the throat of a chicken. It has been found effective against many of the gram-negative bacteria unaffected by either penicillin or the sulfa drugs, as well as against bacteria responsible for lobar pneumonia, contagious abortion, type B paratyphoid, dysentery, tularemia, relapsing fever and infectious jaundice. But the most exciting investigations concern the use of streptomycin against tuberculosis infection.

Dr. Charles W. Mushett, Merck Institute for Therapeutic Research, stressed the fact that results so far are largely based on laboratory experiments with isolated bacteria and infected laboratory animals. Clinical tests on humans are still relatively few in number. Dr. Mushett, however, cited the work of Reimann, who reported clinical improvement in three of five patients treated with streptomycin in the late stage of typhoid, and Hinshaw and Feldman's preliminary report on the treatment of 33 tuberculous patients. Results in both cases were considered "very encouraging" but with the warning added that "No one as yet actually knows what the final judgment will be."

Dr. Mushett recalled that "the principle of antibiotic action, namely that involving antagonisms between various species of organisms, has been known since the time of Pasteur." Substances capable of killing disease germs are produced by bacteria, molds, algae, higher plants and animals. In the saliva and tears of man, for example, the antibiotic agent lysozyme is present. Penicillin, although the least toxic of the antibacterial chemo-therapeutic agents, nevertheless lacks in activity against most of the gram-negative bacteria. In 1944, after years of research, Dr. Selman P. Waksman and his co-workers announced the discovery of streptomycin, which, next to penicillin, is one of the least toxic chemotherapeutic agents known.

Dr. Mushett described streptomycin as an organic base, very soluble in water, whose formula appears to be $C_{21}H_{37}N_7O_{12}$. Unlike penicillin, it is chemically stable and therefore not destroyed to any appreciable extent in the gastro-intestinal tract. When taken by mouth, however, very little is absorbed into the blood stream, so that in treating infections outside the intestinal tract, intravenous, intra-muscular or subcutaneous administration is indicated.

"In general," said Dr. Mushett, "streptomycin is bacterio-static in low concentrations and bactericidal in high concentrations."

Hercules Appointee

Dr. Howard L. Reed has been appointed assistant medical director of Hercules Powder Company, Dr. Lemuel C. McGee, Hercules medical director, announced recently.

Dr. Reed has been medical director of the Hercules-operated Sunflower Ordnance Works in Kansas for the past five years. Prior to that, he was medical director of the Hercules-operated Badger Ordnance Works in Wisconsin.

A graduate of Duke University and Duke Medical School, he served as interne and resident physician at Roosevelt Hospital in New York City for nearly three years before joining Hercules in Wisconsin in March, 1942.

Army Mismanagement of Medical Manpower Charged.

Col. W. Paul Holbrook, testifying before the Senate Military Affairs Committee as an investigator to survey army medical needs, said that too few doctors had been used by the Army at the front and too many behind it. He claimed that the armed forces had sixty thousand doctors for the twelve million men in uniform and had left only ninety thousand at home to care for one hundred and twenty million civilians. He declared that there were too many doctors for service personnel and that determining the number of physicians required on the numerical strength of units was a "fundamental fallacy" of the army system. Colonel Holbrook said that fifty doctors assigned to a fifteen-thousand man infantry division were "far too many for preventive medicine to healthy young men, yet far too few on the field of battle." Despite this, he pointed out, this number of doctors was assigned to a division whether or not it was at the front or in an inactive theater.

All of which recalls the old saying: There is a right way, a wrong way, and the way the Army does it, or something to that effect.

Editorial, *N. Y. St. J. M.*, April 15, 1946.

Tuberculosis is intimately linked with nutrition, both because the disease is common under famine conditions, and because an individual's lowered resistance is connected with appetite disorders, and wrong dietetic habits. One-third of tuberculous people cannot obtain a proper diet on account of inadequate income. Better nutrition for all will enable the community to shoulder the burden of its tuberculosis, and gradually diminish the weight of that load.—*NAPT Bull.*, England, June, 1945.

The First Year

THE SUCCESSFUL NUTRITIONAL history of S-M-A babies is due to the remarkable similarity of S-M-A to mother's milk. It is essentially the same as human milk in percentage of protein, fat, carbohydrate and ash, in chemical constants of the fat and in physical properties.

S-M-A* IS RECOMMENDED for normal, full term infants in the early weeks of life when a supplementary food is required for the breast-fed infant. It may be given to infants of any age whenever the mother's milk is unavailable, of poor quality or insufficient quantity.

S-M-A is derived from the milk of tuberculin-tested cows. Part of the butter fat of this milk is replaced with animal and vegetable fats, including biologically assayed cod liver oil. Milk sugar, vitamin A and D concentrate, carotene, thiamine hydrochloride, potassium chloride and iron are added. *REG. U. S. PAT. OFF.

Supplied: 1 lb. tins with measuring cup.

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GERIATRICS

A new medical journal, *Geriatrics*, appeared last month on the desks of many American physicians. The very word is news to the laity. Actually it was coined in 1908 by Dr. Leo Nascher, who wrote a text book entitled "Physiological Changes in Old Age." Geriatrics derives from two Greek words: *geras*, meaning old age, and *iatrikos*, relating to the physician. There are few doctors who are exclusively geriatricians, but every general practitioner is called upon more and more to practice geriatrics, for there is an ever increasing number of older people.

This is literally the age of Age. More than 26,000,000 persons in the United States, or 20 per cent of our population, are 45 years of age and over. Admittedly this greater span of human life in recent decades is attributable to progress in child care. Now the trend is developing toward giving the older person the same sedulous medical care which the younger person has had.

The first State Board of Health to develop a Division of Geratology is that of Indiana. Its express purpose, so the Board states, is a study of the factors affecting advancing age and the application of knowledge now available concerning the diseases and disabilities of age, not only that the years of life may be increased in number but also that increased happiness and usefulness may be added to these years.

"Many diseases of old age could be prevented by special attention to the maladies of middle life," says Thewlis in the current issue of *Geriatrics*. "The physician must be prevention-minded and speculate on what the condition of a patient 40 to 50 years of age will be ten or twenty years hence. Only by such studies can life be made more tolerable for people in advancing years. Surgeons were among the first to realize that old persons could tolerate surgical treatment. Many old people have been able to live in comfort for a long time following surgery, even at the age of 75 and 80.

"The aged do not want to be idle. Give them jobs and they will not ask for charity. Prejudices against elderly workers have decreased gradually. There should be no decline in earning power with advancing age. There are fewer industrial accidents in elderly workers. Labor turnover is smaller. Output is often equal to that of younger workers; in some cases productivity is increased. Older workers are likely to be more stable, loyal, and responsible."

In 1805 Benjamin Rush published as part of his book, "Inquiries and Observations," a chapter entitled "An account of the state of the body and mind in old age with observations on its diseases." He attributed longevity to heredity, temperance, mental alertness, equanimity of temper, matrimony.

The new journal will be issued bimonthly, and be edited by Dr. A. E. Hedback, also the editor of *Modern Medicine*, with the assistance of a board of thirteen physicians especially concerned with this field. The subscription price is three dollars a year.

Delaware Doctors Honored in the Service

Capt. Donald W. Cheff

Capt. Cheff, Delaware's only physician to lose his life in World War II, is memorialized by a rest camp in the Philippines. It is named Cheff Hall, in honor of the former resident physician of Brandywine Sanatorium who is buried on Ie Shima, one grave from that of the famous war correspondent, Ernie Pyle.

The hall was built and named for Capt. Cheff by members of his 302nd Medical Battalion of the 77th Infantry Division after their return from the Philippines following the victorious end of the Okinawa campaign.

The Silver Star medal and the Bronze Star Medal won by the heroic doctor were awarded posthumously in ceremonies held recently in Harrisburg, Pa. The medals were received by his wife, Mrs. Elizabeth Cline Cheff, who with their children, Teddy and Roberta, now resides at 104 West Main Street, Waynesboro, Pa. His wife was a technican at Delaware Hospital.

The Silver Star medal was awarded to Capt. Cheff for action on April 16, 1945, on Ie Shima, the day he lost his life. The citation told of how he landed with a platoon of his collecting company 25 minutes after H-hour, and set up a collecting station on the beach. He led his litter bearers inland through heavy small arms fire and then returned to the beach, where he learned that casualties were mounting and that because of the long arduous litter haul, there would be extended delay in evacuation.

By that time two one-quarter ton ambulances had been landed, although Capt. Cheff had been informed that the road to the regiment was insecure, heavily mined and under constant small arms fire, he personally led the ambulances to the battalion aid station, working through continuous enemy fire over a mine-strewn road. He evacuated eight casualties to the beach and then led the ambulances back and loaded them with eight more casualties. While proceeding back to the beach on the second trip, the ambulance in which he was riding struck a mine which killed all occupants.

The Bronze Star medal was awarded the medical officer for action on Leyte on Dec. 13, 1944. During intense fighting, troops suffered so great a number of casualties that it was impossible for litter bearers to evacuate the wounded from the battalion aid station because all routes to the rear had been cut off. There existed only a route across three hundred yards of rice paddies, waist deep in water. Capt. Cheff obtained an amphibious tractor to cross the paddy, directed it to the aid station and fearlessly accompanied it to the front lines where men had not yet been treated.

Journal-Every Evening, March 23, 1945

Maj. Gerald A. Beatty

The Bronze Star medal was awarded to Maj. Gerald A. Beatty, Medical Corps, U. S. Army, 2004 Park Drive, for meritorious service in support of combat operations from March 22, 1945 to May 8, 1945 in France and Germany. The citation was recently received by Maj. Beatty who is now on terminal leave.

The Wilmington physician served with the Third Hospitalization Unit, Tenth Field Hospital. He entered the service in July, 1942, and spent two and a half years overseas. In that time he saw service in the Middle East, North Africa, Italy, France and Germany. He returned to this country in July, 1945.

His citation read in part: "Maj. Beatty's energy, cooperative spirit, foresight and knowledge made it possible to support rapidly moving combat troops. At all times his exemplary devotion was inspirational to both patients and personnel of the unit."

Dr. Beatty has resumed his practice at 503 Delaware Avenue.

Journal-Every Evening, November 3, 1945.

Lieut.-Comm. John P. Martin

Lieut.-Comm. John P. Martin, Navy Medical Corps, of Camden, Del., who at his own request went on combat missions with Navy flyers to observe the reactions of combat fatigue, is now on terminal leave.

The Navy flight surgeon recently received a commendation from Fleet Admiral Chester W. Nimitz, commander-in-chief of the U. S. Pacific fleet. It reads:

"For meritorious conduct while participating in aerial flights as flight surgeon of Carrier Air Group Twelve, attached to the U. S. S. Saratoga from Jan. 31 to Feb. 11, 1944. In order to obtain a better understanding of pilot fatigue under actual combat conditions, Lieut.-Comm. Martin requested permission to take part in strikes against the enemy. Permission was granted and he subsequently took part in five separate over-water strikes against enemy installations on Eniwetok Atoll. Through his outstanding desire to improve his professional knowledge, and courage in accompanying the air crew on these hazardous missions beyond the requirements of his naval status, he contributed materially to the physical and mental welfare of the pilots and the successful operations of Carrier Air Group Twelve. His courageous conduct and devotion to duty were at all times in keeping with the highest traditions of the United States Naval Service."

On returning to the States, Comm. Martin served at the Alameda and Santa Rosa Naval Air Stations in California, and aboard the U. S. S. Ranger. Mrs. Martin, the former Miss Caroline Hughes, daughter of former U. S. Senator and Mrs. James H. Hughes of Dover and Rehoboth Beach, has been west with him for a part of the time.

Lieut. Commander Martin was made Commander in November, 1945, and resumed practice in Camden in December. He was recalled to duty on March 18, 1946 and is now stationed at U. S. Naval Air Station, Minneapolis, as Executive Officer.

Journal-Every Evening, October 9, 1945.

Col. Alfred R. Shands, Jr.

One of the highest awards for meritorious service in the U. S. Army, the Legion of Merit, for outstanding leadership and organizational ability, while serving as chief, surgical branch, office of the Air Surgeon, Maj. Gen. David N. W. Grant, during World War II, was presented to Col. Alfred R. Shands, Jr., U. S. Army Reserve. Medical Director and Surgeon in Chief of the Alfred I. DuPont Institute, Rockland, Road, on April 13, 1946, in the presence of his wife, members of the hospital staff, and personal friends. Capt. William Mathesius, Jr., executive officer at the U. S. Army recruiting office, Federal Building, and a former Army Air Force flyer, made the presentation.

The citation accompanying the Legion of Merit award stated that Col. Shands contributed immeasurably to the high standard of surgical services at all Army Air Forces medical facilities, and that his leadership and organizational ability developed a standard of surgical practice which greatly reduced the period of hospitalization at a time when the conversion of manpower was of prime importance.

Col. Shands served in the Office of Air Surgeon with General Grant and Col. William P. Holbrook, chief of professional division, between June, 1944 and October, 1945, when he was placed on terminal leave. He became a member of the U. S. Reserve with rank of full Colonel on January 20, 1946.

One of the first of the nine fulltime doctors to enter the armed forces from Alfred I. DuPont Institute (their entire staff of doctors served in the service at the same time) Col. Shands entered the Army with rank of major in September, 1942, and served first at Seymour Johnson Field, Goldsboro, N. C. He was raised to rank of lieutenant-colonel while serving at the AAF Tactical Air Force Center, Orlando, Fla., between February, 1943, and June, 1944. While serving in Washington, D. C., directly under Col. Holbrook, he gained the coveted eagle rank.

Sunday Star, April 14, 1946.

Col. Victor D. Washburn

Col. Washburn was recently honored for his services, and is authorized to wear the Army Commendation Ribbon by direction of the Secretary of War. The citation reads as follows:

Col. Washburn, as a staff member of Massachusetts State Headquarters of the Selective Service System from 17 August 1942 to 2 September 1945, organized and operated a medical survey program designed to provide the armed forces with advance information on registrants with poor medical histories and to preclude the armed forces from accepting for induction and assuming the responsibility for men basically disqualified for service. Col. Washburn discharged this and other responsibilities of his office with distinction.—Lewis B. Hershey, Major General, U. S. A.

Colonel Washburn was ordered to active duty in October, 1940, and was state medical officer at Delaware State Headquarters of the selective service to August, 1942.

Journal-Every Evening, October 23, 1945.

John J. Cassidy, M. D.

Dr. John Joseph Cassidy, 48, died on March 31, 1946, in St. Francis Hospital, where he had been a patient for 10 days, of a heart condition.

Dr. Cassidy, a native of this city, was chief in medicine at St. Francis Hospital, also was associate chief in medicine at the Delaware Hospital, and medical examiner for the Delaware State Hospital.

A veteran of World War I, Dr. Cassidy held the Croix de Guerre for bravery under fire as an ambulance driver in France. He served overseas for 18 months, enlisting at the age of 18 with 36 other Fordham University students who organized an ambulance unit.

A graduate of Salesianum High School, Dr. Cassidy received his bachelor's degree from Fordham University in 1925 and his doctorate in medicine from Temple University in 1929. He served his interneship at St. Agnes' Hospital, Philadelphia, after which he returned to Wilmington to begin practice.

Dr. Cassidy was a member of the New Castle County Medical Society, the Medical Society of Delaware, the American Medical Association, the Catholic Physicians' Guild of Wilmington, Bishop Monaghan Council, Knights of Columbus, and Delaware Post No. 1, American Legion.

Surviving are his wife, the former Miss Nora E. Horgan of Wilmington; a small daughter, Elizabeth; his mother, Mrs. Johanna S. Cassidy of this city; two sisters, Miss Anne Cassidy of Wilmington and Sister Marie St. John, Order of St. Joseph, Philadelphia; and a brother, Herbert A. Cassidy, also of this city.

Funeral services were held on April 3, 1946, in Sacred Heart Church, and interment was in Cathedral Cemetery, Wilmington.

In the little Polish town of Otwock, a few miles southwest of Warsaw, Swedish money and effort are combining to build a hospital to help relieve the suffering of Poland. The hospital consists of thirty-two buildings, it has beds for 300 patients, and will cost about 3 million kroner. It is to be primarily a tuberculosis hospital but will also have a general medical division. Every bit of material for the actual building as well as the equipment and medicines have been sent from Sweden. Swedish engineers are directing the construction of the buildings and Swedish doctors the medical aspects of the project. In January a completely equipped tuberculosis dispensary, including the latest types of x-ray apparatus, left Stockholm headed by Dr. H. Neumuller, a specialist in this field. With him were a pediatrician, a nurse and an x-ray technician. A Polish tuberculosis specialist, Polish nurses and office help will assist Dr. Neumuller. The Swedes plan to run the hospital for a year and then turn it over to the Poles for future work. —*J. A. M. A.*, Feb. 23, 1946.

The first wealth is health. Sickness is poor-spirited, and cannot serve anyone; it must husband its resources to live. But health answers its own ends, and has to spare; runs over, and inundates the neighborhoods and crooks of other men's necessities.—Ralph Waldo Emerson.

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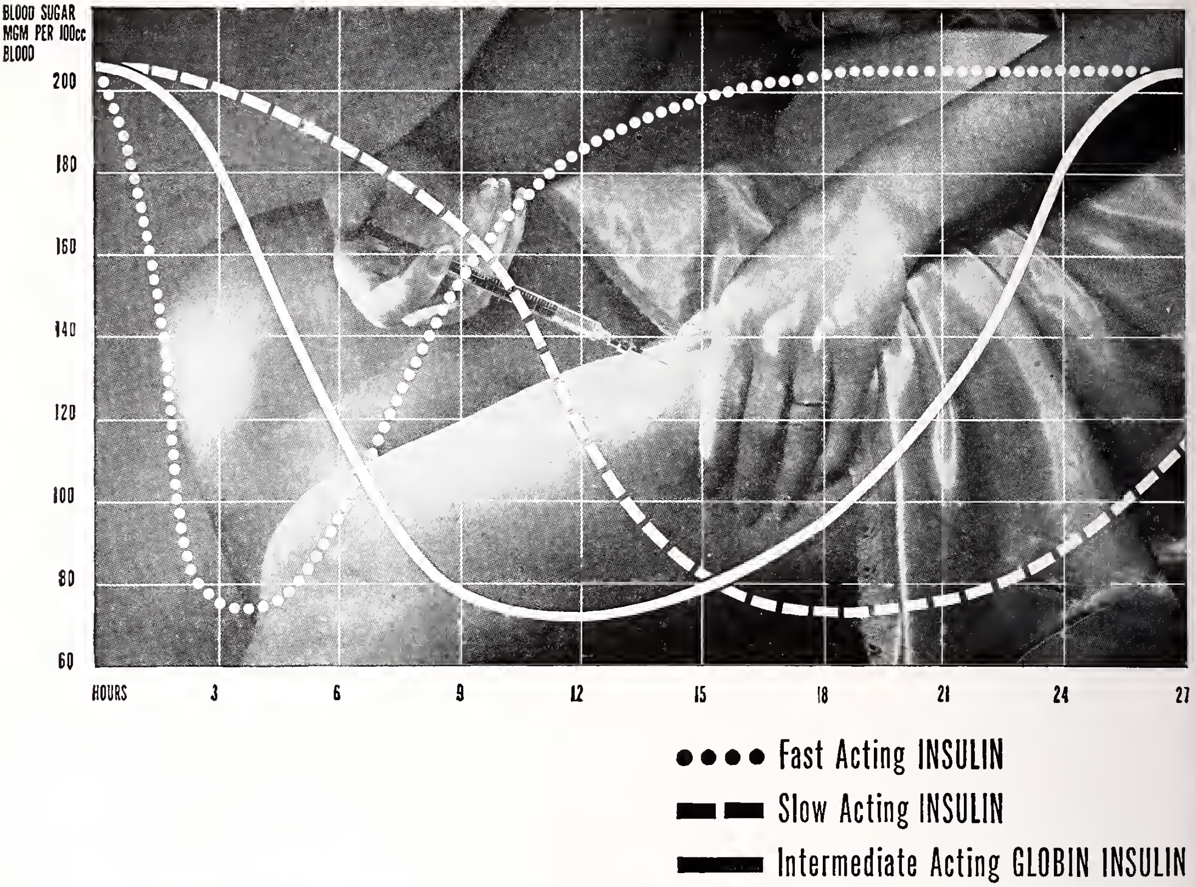

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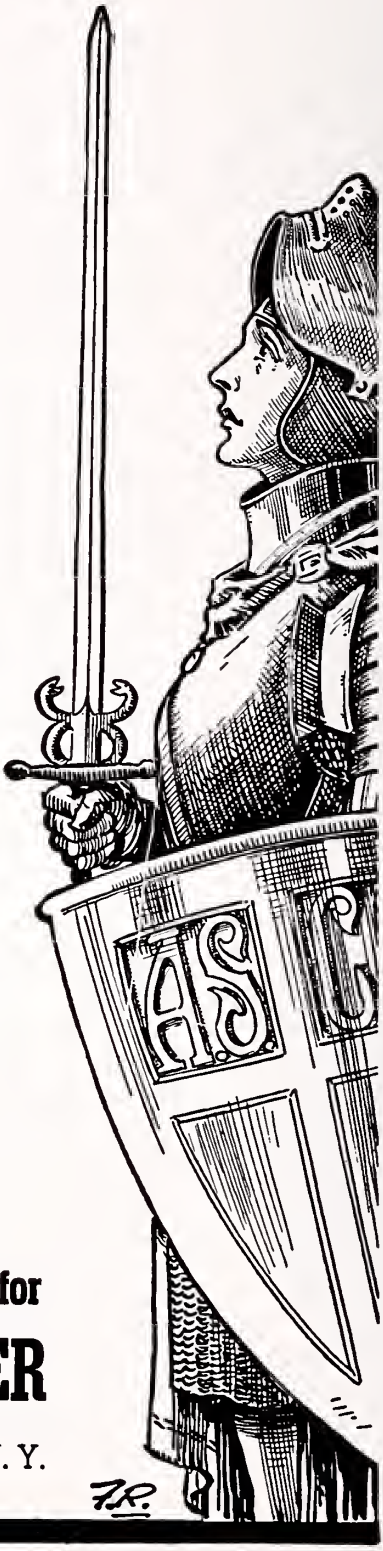

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* *Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60

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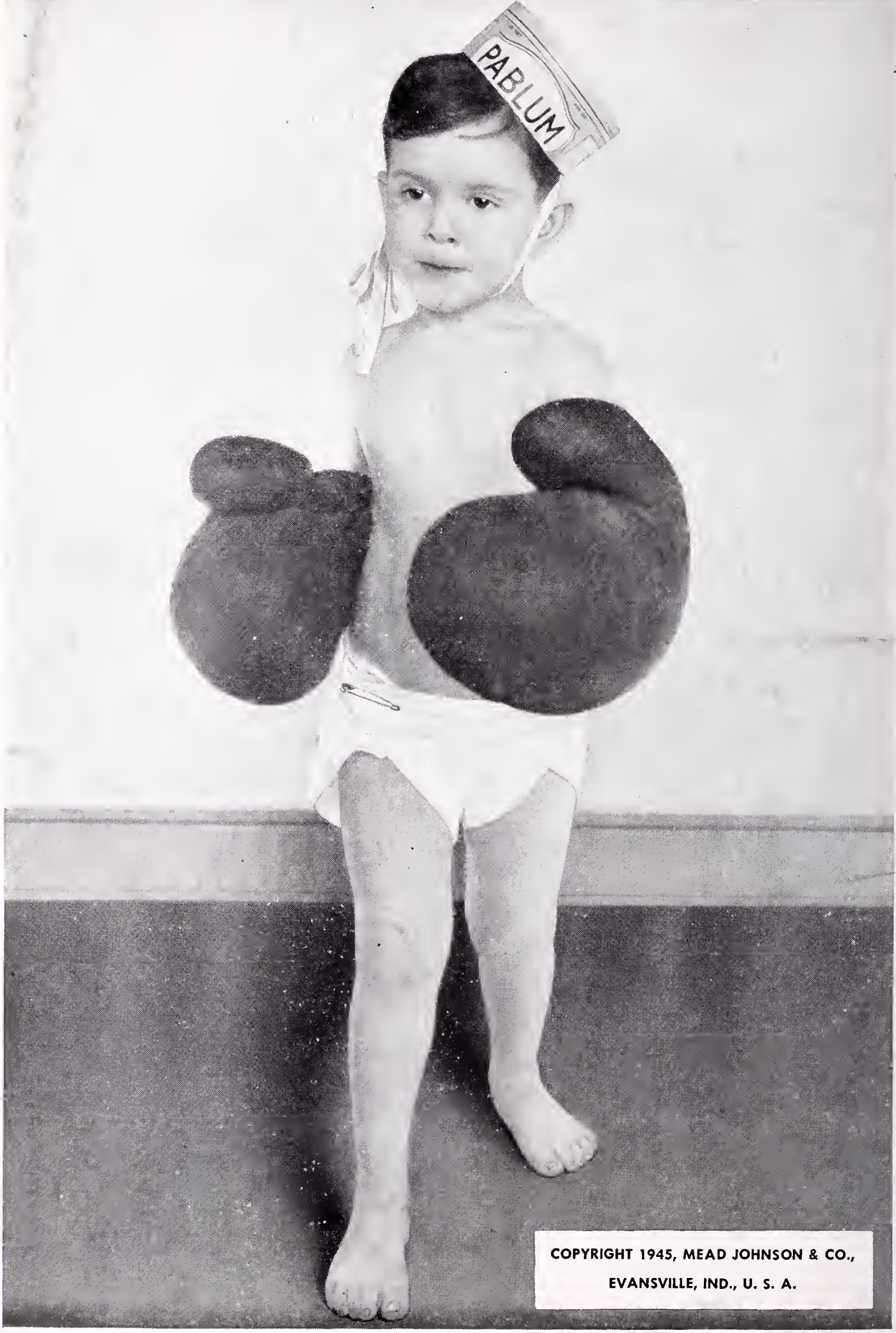

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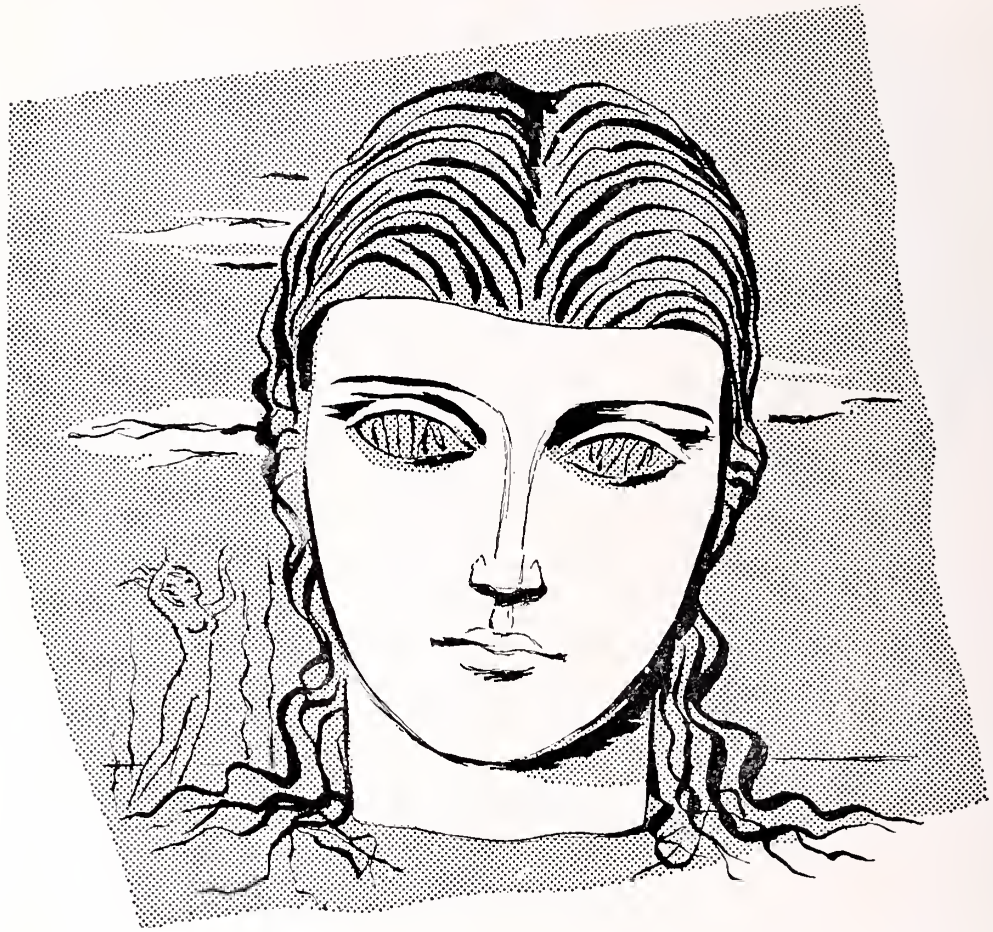

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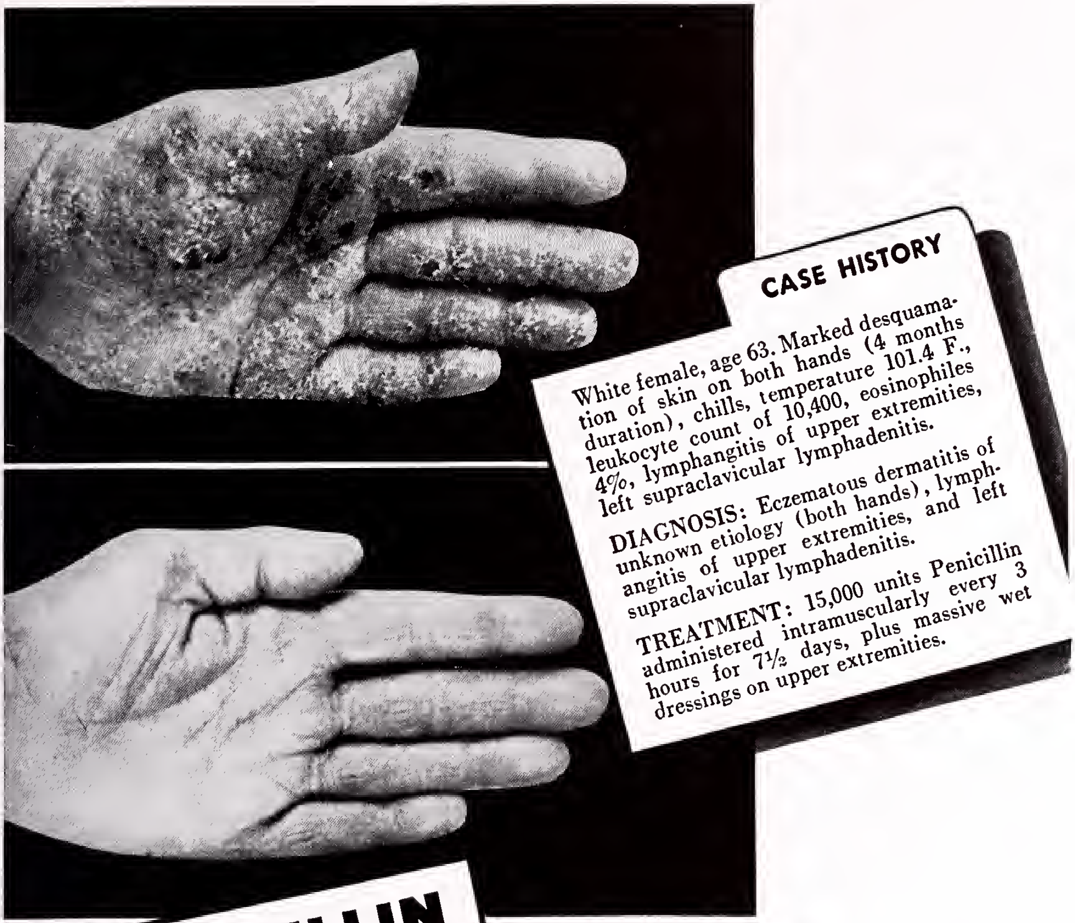

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White female, age 63. Marked desquamation of skin on both hands (4 months duration), chills, temperature 101.4 F., leukocyte count of 10,400, eosinophiles 4%, lymphangitis of upper extremities, left supraclavicular lymphadenitis.

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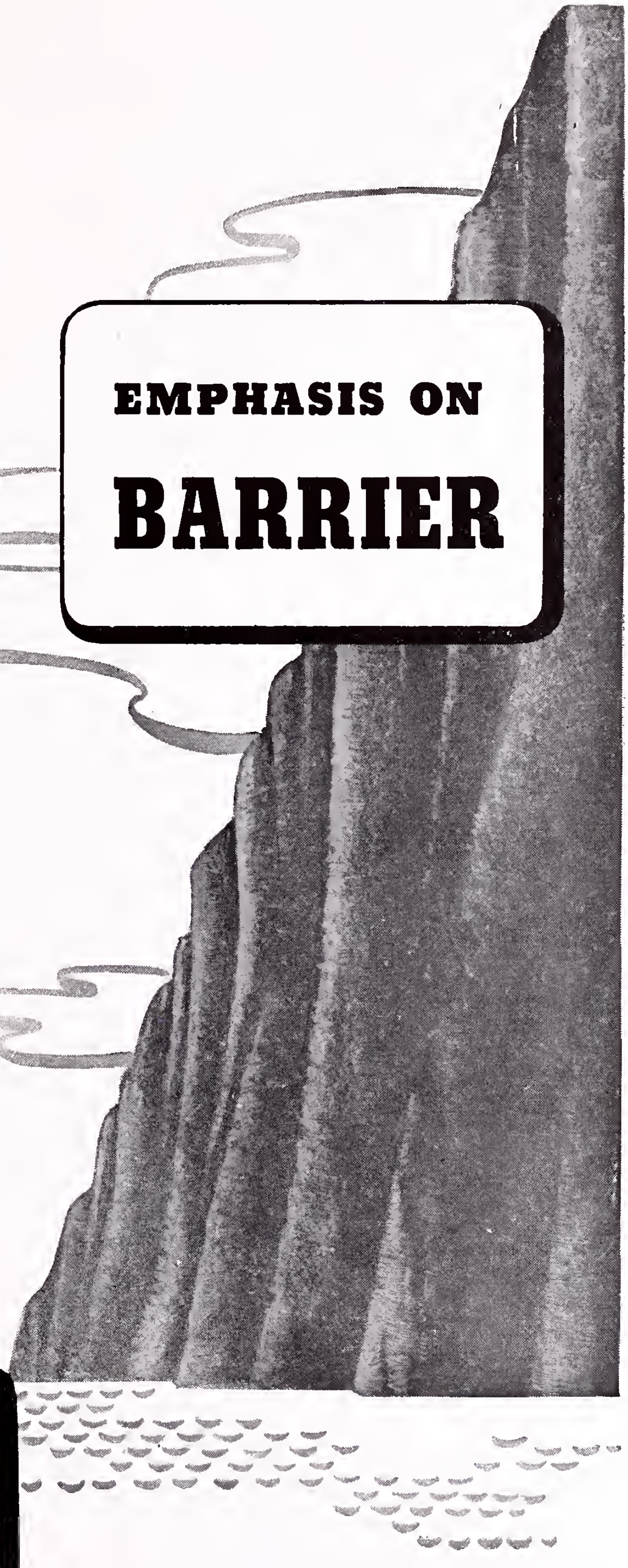

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1. Clinic Reports: Planned Parenthood Services in the United States. Human Fertility 10: 25 (Mar.) 1945.
2. Dickinson, R.L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
3. Warner, M.P.: J.A.M.A. 115: 279 (July 27) 1940.

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HEMOCHROMATOSIS*

Report Of Case With Necropsy

Edward M. Bohan, M. D.,**
Wilmington, Del.

Hemochromatosis, or bronze diabetes, is a rare disease of metabolism, the cause of which is unknown. The liver is primarily affected with an abnormal deposition of iron containing pigment. The pancreas is affected early in the course of the disease and this accounts for the diabetic characteristics of the disorder, which are present in 80 to 90 per cent of cases. The lymph nodes, striated muscle, alveolar epithelium, reticulo-endothelial system and skin are subject to the pigmentation, although there are variations in the amount of pigment present. For example, the skin does not show pigmentation in 20 per cent of cases. Duncan[1] states that the disease is twenty times as common in males as females. In the Mayo Clinic, Wilder[2] reports that only 34 cases have been recorded over a period of 15 years. Berk and Lieber[3] performed autopsies on 12 cases at the Philadelphia General Hospital, from January, 1920, to December, 1937. 311 cases were all that could be collected by Sheldon[4] in his review of the subject. Humphrey, Alpiner and Verity[5] say that only 400 cases were reported in the literature until 1942.

The derivation of the pigment has resulted in many interesting opinions and discussions. Boyd[6] does not think that the pigment is derived from the blood because of the absence of hemolysis and hyperplasia of the bone marrow. Mallory[7] considers the metabolic disturbance to be related to chronic copper poisoning. He succeeded in producing the diseases in animals by the administration of copper. He thinks that the hemoglobin liberated from the wastage of red cells unites with the copper to form cuprohemol. The foreign metal is then freed and hemofuchsin formed. The latter is slowly changed into hemosiderin by enzymatic action. Rous and Oliver[8] produced a condition identical with hemochromatosis in rabbits by repeated transfusions of blood, so that large amounts of blood were constantly being destroyed. 20 to 50 grams of iron are present in the body as compared with three grams in the normal person. Berk and Lieber[3] say that an estimate of the time taken to accumulate this amount of iron is between 30 and 50 years before the diagnosis is made. In a statistical study Boulin[9] claimed that it may take 10 years or even the greater part of the patient's lifetime for the condition to progress, until the melanoderma, cirrhosis and diabetes mellitus are present as a triad of symptoms. The copper associated with the disease is increased four to five times above normal, and is present in nearly all the organs except the kidney.

Most writers on the subject seem to think that the disease is some inborn error of iron metabolism, so that the tissues cannot utilize the iron given to them, or that there is a defect in the excretion of iron taken into the body over a period of years. According to McCance and Widdowson [10] the iron content of the body is controlled through the regulation of absorption and not by excretion. Best and Taylor[11] state that iron is a one-way element, being excreted only in minute amounts. Iron is absorbed in the upper part of the small intestine and after absorption disappears from the blood being stored mainly in the liver, but also in the spleen and kidney. The acidity of the gastric juice and the need of the body for iron may regulate the absorption, continue Best and Taylor[11], in discussing the metabolism of iron. In one of the more modern theories, Butt and Wilder[12] think that the intestinal mucosa may be defective due to a deficiency in vitamin A. This is supported by the view of Flaum and Stoeck[13], who find the vitamin A content of the liver greatly reduced in hemochromatosis.

---

* Read before the Staff Meeting, St. Francis Hospital, May 7, 1946.

** Chief in Medicine; Associate in Metabolic Diseases, St. Francis Hospital.

The liver is changed to an orange brown color, but the color of the spleen and pancreas are unchanged. Shields Warren[14] in writing of the pathology of the disease says that the life of the cell is soon over as the pigment increases. Necrosis occurs and the stroma condenses. He claims that some attempt at regeneration takes place, considerable number of mitotic figures being found in the islets of the pancreas.

Malaise and asthensia, loss of weight and pigmentation are the earliest symptoms. Enlargement of the liver and diabetes mellitus are later symptoms. The secondary sex characteristics tend to disappear in many cases and according to Kelper et. al[15], this sign may appear early in the disease and be of diagnostic value. Morrione[16] thinks that the inability of the liver to inactivate estrogen may be responsible for the change in sex. Often the symptoms of diabetes are the first to be detected, even coma may have taken place. Anemia of a hypochromic variety appears. The blood sugar is elevated in many cases and the serum albumin and globulin ratio is reversed. If the diagnosis is not made by the foregoing symptoms and signs, a biopsy of the skin, analysis of the ascitic fluid, or urinary sediment may aid the clinician in his deductions. Beardwood and Rouse[17] describe a method by Fishback for the clinical demonstration of iron, in which an intradermal test is done with potassium ferrocyanide and hydrochloric acid. A positive reaction is present if a light blue color appears immediately and darkens to a deep blue within an hour. There also appears a peripheral red zone. A negative reaction is a white wheal within the peripheral red zone. Both of these reactions may take two weeks to fade away.

Brunsting[18] refers to Addison's disease chronic arsenic poisoning, and argyrosis in discussing differential diagnosis. The Addisonian syndrome is associated with an uniformly low blood pressure. The usual absence of diabetes and skin tests serve to distinguish the disease from hemochromatosis. Chronic arsenism gives rise to alternating areas of hyper- and depigmentation, creating a raindrop effect. It is also quite distinctive histologically. Argyrosis has a pigmentation which is more dark gray in color than brown. Glistening particles of silver will be revealed on dark-field illumination.

The cause of death is given in percentage by Duncan[1]. Diabetic coma, 50%; cirrhosis of liver, 11%; pneumonia, 10%; tuberculosis, 9%; and carcinoma of liver, 7%. The disease is invariably fatal, but the patients may be kept more comfortable by control of the complications that are present. Insulin resistance is common. 1,000 or more units of insulin have been given to cases in coma without result. This insensitivity to insulin is probably due to loss of storage capacity in the damaged liver for glycogen.

The duration of life previously assumed to be about a year and a half after diagnosis is made, has been appreciably prolonged by the discovery of insulin, the development of long acting insulins, and the earlier diagnosis and superior treatment of diabetes mellitus.

Case History

The patient was a white male, aged fifty-five years. He was 5 feet, 10 inches tall, and weighed 145 pounds. In May, 1945, he noticed that a small inguinal hernia which had been present for years was protruding, so he decided to have it repaired. At operation the hernial sac was opened and the abdomen found to be filled with fluid. No further surgery was done and he was allowed to recover. He became well enough to spend the rest of the summer on vacation, returning to his home in September. The ascites grew gradually more severe. He was tapped at intervals of 10-14 days. Weight loss was quite apparent at this time. The onset of coma on October 27, 1945, resulted in his admission to St. Francis Hospital on October 28. The chief complaints were extreme weakness, drowsiness, loss of weight, and swelling of the abdomen. History of illnesses in the past revealed nothing of note, except for the fact that he had not been in robust health for seven or eight years. In other words he had been "ailing." Family history: Mother died of heart disease. Father died of intestinal obstruction. One brother and three sisters alive and well.

The physical examination revealed a fairly well nourished man, in no apparent distress. His face was flushed, he was drowsy, and acetone was present on his breath. The abdomen was markedly distended with fluid. There was a faint brownish pigmentation on the back, especially around the scapulae. On the dorsum of the fourth toe, on the right foot, there was a marked deep bronze pigmentation, which faded into a lighter pigmentation, as it approached the ankle. Two toes on the other foot were also deeply bronzed and there was a patchy lighter pigmentation on the tibial surfaces. The lower abdomen and forehead had a faint almost indiscernible spotty light brown color.

A blood sugar taken shortly after admission to the hospital was 323 mgm. per 100 cc. of blood. Later the blood urea was found to be 17 mgm., and the creatinine 1.5 mgm. Carbon dioxide combining power amounted to 24 volumes per cent. Plasma chloride was 370 mgm. The white cell count was 11,000; polymorphonuclears, 82%; lymphocytes, 15%; monocytes, 2%; and eosinophiles, 1%. The red cell count was 4,240,000, with 75% hemoglobin.

Treatment was instituted for diabetic acidosis with glucose, unmodified insulin, salt, and alkali. Salyrgan was administered intramuscularly daily for the ascites. Improvement was evident on the 30th of October, and the insulin was changed to 20 units of globin insulin, after the morning and evening meals. He also received amino acids, crude liver extract, and vitamins A and B complex. Diet was high in protein and carbohydrate.

The heart and lungs were found to be normal. Neither the liver nor the spleen could be felt. The diabetes became stable. The clinical symptoms and signs of the disease were not apparent. The insulin was gradually reduced to 14 units of globin in the morning and eight at night. This was evidence that the glycogen reserve of the liver was being added to. The theory of compatible hyperglycemia of Sindoni[19] was followed in treatment. The blood sugar level was kept between 170 and 220 mgm. All sugars were taken two hours after breakfast. Further readings were 196 on November 9, 170 on November 12, and 158 on November 20. The serum protein was 8, albumin 2, and globulin 6. The patient was comfortable and sat out of bed on occasions. The pigmentation gradually increased. No diminution in the ascites took place and the output never exceeded the intake, despite the daily doses of salyrgan in 2 cc. amounts.

The temperature was never over 99 degrees, except on the 19th of November, when it reached 100.2 degrees. The pulse stayed between 80 and 90 per minute. The patient remained very cheerful at all times during his illness. On November 25 he became restless and irrational. He continued this way off and on, until November 27, when abdominal pain seized him. At 11:20 p. m. his pulse became imperceptible and his respirations shallow and rapid. The abdomen was rigid and tender in the epigastrium. The patient expired at 8:10 a. m. the next morning.

Necropsy Report*

The body is that of a well developed and fairly well nourished adult white male. There is no rigor mortis. The skin is slightly jaundiced and there are pigmented areas on the anterior surfaces of the lower legs, the dorsum of the hands, and upper chest. The abdomen is moderately distended and presents the marks of numerous puncture wounds. The feet and ankles are slightly edematous and there is a longitudinal scar on the dorsum of the right foot. The fourth finger on the right is missing. Eyes, ears, nose and mouth are not remarkable. Pupils are round, regular, and equal, each measuring 0.5 cm. in diameter.

Peritoneal Cavity: Surfaces are smooth and glistening. There are no adhesions. A large amount of thin watery fluid is present. This fluid pushes the diaphragm upward, but otherwise the abdominal organs are normally arranged. The mesenteric lymph nodes are not enlarged.

Pleural Cavities: Surfaces on the left are smooth and glistening. About 400 cc. of thin watery fluid are present. The pleural surfaces on the right are entirely covered with dense fibrous adhesions.

Pericardial Cavity: Surfaces smooth and glistening. There are no adhesions or excess of free fluid.

Heart: 340 grams. Normal in size, shape and position. Dissection of the organ shows no evidence of pathology.

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* By Dr. Douglas M. Gay, Pathologist, St. Francis Hospital.

Lungs: The left weighs 320 and the right 550 grams. Both lungs are soft and crepitant throughout and the increased weight of the right lung is due to numerous fibrous adhesions which necessitated stripping off the parietal pleura in removing the lungs.

Spleen: 580 grams. About five times normal size. The capsule is irregularly thickened over a dark red surface. The splenic pulp is firm in consistence and cuts with slight resistance. It is dull red in color and very little pulp scrapes away.

Pancreas: 180 grams. About 50 per cent heavier than normal. It is firm in consistence and shows no definite gross pathology. A branch of the celiac axis running along one edge of the pancreas and probably representing the splenic artery is partly occluded with adherent gray thrombus.

Liver: 750 grams. About one-half normal weight but appears to be about one-third or one-fourth normal size. The organ is uniformly nodular throughout, the nodules being less than 1 cm. in diameter. The nodules are red-brown in color and are separated by an abundance of fibrous tissue, which gives the liver a firm consistence. The gallbladder is slightly thick walled and contains a few small dark brown calculi.

Adrenals: Normal in size, shape, color and consistence.

Urinary Organs: The combined weight of the kidneys is 370 grams. They are similar and are normal in size, shape, color and consistence. The capsule is thin and strips readily from a normal red-gray surface. The cortex averages 0.7 cm. in thickness. Calices, pelves, ureters, and bladder are normal.

Genital Organs: Grossly normal.

Blood vessels: The aorta is smooth and elastic in its upper portion and contains a few slightly raised plaques in the lumbar portion. The celiac axis is partly occluded by an adherent thrombus. The portal vein near the liver is also partly occluded by an adherent gray thrombus. Throughout the abdominal cavity there are numerous veins not ordinarily seen in the course of an autopsy that were made prominent as the result of varicosities and because of the development of collateral circulation. No superficial prominence of blood vessels is noted, but varicosities are present in the esophagus as noted below.

Gastro-Intestinal Tract: The veins of the esophagus are unusually prominent and by transillumination are seen to be distended tortuous structures. Portions of the surface are slightly roughened, but no definite perforations or ulcerations are seen. The stomach is distended with a large amount of blood, some of which is in the form of blood clot of recent origin and more of which is brown in color due to digestion. It is presumed that the fatal hemorrhage into the stomach originates from one of the esophageal varices, since there is no ulceration of the gastric mucosa and transillumination of this organ shows no evidence of varicose veins.

MICROSCOPIC

Heart: Normal.

Lung: Section includes a portion of the pleura thickened with scar tissue. The scar tissue extends into the adjacent lung tissue where a number of the alveoli are obliterated. Elsewhere, the alveoli contain edema fluid.

Spleen: There is an increased amount of fibrous tissue throughout and numerous monocytes filled with blood pigment are scattered through the pulp.

Pancreas There is diffuse fibrosis throughout the organ with obliteration of many of the islands of Langerhans. Throughout the fibrous tissue there are scattered monocytes filled with orange-brown pigment.

Liver: The portal spaces are enlarged with masses of scar tissue and lymphocytic infiltration. Strands of scar tissue extend from one portal space to others, subdividing the organ into a number of small nodules. The liver cells in the portal spaces contain prominent orange-brown granules. In the region of the hepatic vein, there is active destruction of liver cells with the necrotic cells undergoing phagocytosis by polymorphonuclear leukocytes. Other liver cells in this vicinity contain vacuoles within the nuclei. These vacuoles are interpreted as glycogen and indicate hyperglycemia at the time of death. Special micro-chemical reactions on the liver and all of the other organs in the autopsy indicate that the orange-brown pigment is blood pigment, thus proving the diagnosis of hemochromatosis.

Adrenal: The deep layer of cortical cells contains an abundance of orange-brown pigment.

Kidney: Essentially normal.

Skin: There is no definite abnormal pigment around the sweat glands or elsewhere.

Esophagus: Sections include several widely dilated veins, indicating varicosities.

Summary

A case of hemochromatosis has been presented with three of the classical symptoms and signs, pigmentation, ascites and diabetes mellitus. The diabetes was controlled by dietary means and globin insulin. The ascites and pigmentation increased. The patient died from rupture of an esophageal varix.

Conclusions

1. Hemochromatosis is a rare disease. Etiology and pathogenesis are obscure.
2. Pigmentation may be absent so all cases of diabetes and ascites should be examined for hemochromatosis.
3. Diagnosis may be made by symptoms and signs, supplemented with laboratory tests of the blood, ascitic fluid, urinary sediment and skin biopsy. The intradermal test of Fishback[17] may replace the skin biopsy.
4. The diabetes and cirrhosis of the liver can in most cases be controlled by medical and surgical means adding to the comfort of the patient and prolonging life.
5. The earlier the diagnosis is made, the better the prognosis will be, because of the control of the diabetes. When the disease has progressed to the stage of severe liver damage the prognosis becomes more unfavorable.
6. The urine need not be used as a guide in diabetic coma. Observation of the patient, blood sugar readings and carbon dioxide combining power estimations may serve to control the acidosis or coma. Sindoni[20] advised this method of treatment in 1939. He found that no apparent correspondence existed between the blood sugar and urine sugar in a large number of patients with and without insulin.

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PERITONITIS OF APPENDICEAL ORIGIN *

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Appendicitis is still a highly important problem because of the great frequency of the condition, and because it continues to be responsible for many preventable deaths. The mortality rates in first-class hospitals have been gradually improving, this, however, does not reflect the state of affairs in the population at large. According to Sperling and Myrick[1], appendicitis accounts for 20,000 deaths annually in the United States, the highest mortality rate in any civilized nation in the world. The fact that each year over 10 per 100,000 population die of appendicitis is regrettable, because appendicitis should be associated with little or no mortality, if the diagnosis is made and the proper therapy instituted while the infection is still confined to the appendix. It is only when the infection has extended beyond the appendix, either as a result of catharsis or early necrosis because of ischemic gangrene, that fatal complications occur. It is because of the still relatively high incidence of these complications that a study of appendiceal peritonitis is presented.

Up to the present time we have treated surgically 100 patients with peritonitis of appendiceal origin, without a death. It is because of the definite reduction in mortality and in order to evaluate the results which have been obtained that we are prompted to discuss some of our personal experiences.

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This study includes all patients with peritonitis of appendiceal origin wihch were operated upon during the past 5 years. The ages ranged from 3 to 68 years. The duration of symptoms varied from 24 hours to 10 days. Two patients were admitted with peritonitis and pneumonia. Laxatives were taken by 14 patients. One patient in this group took two laxatives, caster oil in the morning and epsom salts in the afternoon. Much has been said about the danger of purgatives in patients with acute appendicitis. There is adequate evidence to show that caster oil or other active laxatives will greatly increase intestinal and appendiceal peristalsis so that perforation and dissemination of infection are more likely to occur.

In the natural course of the disease, checking of the inflammation will depend upon the immunity of the individual and upon the availability of mobile structures for walling off the process. The complete surrounding and enclosure of the appendix in a protective omental sheath takes place in some cases. A less effective mode of defense occurs when loops of intestines, bladder, mesentery or peritoneum become adherent to one another which enclose the appendix and the pus which surround it. If these walling off reactions fail to limit the infection, the general peritoneal cavity becomes contaminated.

We have made no attempt to distinguish between "local," "spreading," and "generalized" peritonitis. This is in agreement with Ladd[2], who states that "No surgeon really knows how diffuse the process is unless he has done a very improper operation."

Material for culture was taken in a routine manner at operation in each instance. The bacteriology in peritonitis is variable. In this series the following identifications were made: colon bacillus, 62; mixed growth, 30; streptococcus nonhaemolyticus, 1; streptococcus haemolyticus, 4; streptococcus aureus, 4.

It is of interest to note that three of the cases which were positive for mixed groups had bowel perforation. In two cases the appendix was "blown out" at its cecal attachment, with gross fecal contamination of the peritoneal cavity. In the other instance a perforation was present in an adjacent loop of small bowel.

From a laboratory standpoint the leukocyte count in 9 of these cases was normal. In the 91 other cases the count varied from 11,000 to 25,000. The polymorphonculear average count was 82%.

There is a good deal of controversy concerning the treatment of appendiceal peritonitis. There is a divergence of opinion concerning when to operate, how to operate, whether to drain, and what the after care should be. In our opinion most cases of generalized peritonitis run a smoother course, have a better chance of recovery and have a shorter hospitalization if the appendix is removed and modern postoperative care instituted. This implies that appendectomy must be performed with a minimum of trauma, with little or no disturbance of other intraperitoneal structures. In general we conform to the policy of appendectomy and drainage for all cases with peritonitis. The very toxic cases are given adequate preoperative preparation. In some clinics a definite symptom duration, such as 48 or 60 hours, is used to decide the question of immediate operation. We do not agree with this arbitrary method of dictating forms of treatment, because some patients may still be in good general condition 60 hours after the onset of symptoms, whereas others have a ruptured appendix and spreading peritonitis in less than 12 hours. Therefore, we consider each case individually and the mode of treatment is based upon the actual condition of each patient as observed on admission. We are also convinced that it is wiser not to remove the appendix in cases of appendical peritonitis if adhesions must be broken down in its removal. This is particularly true if the process is well walled off. When laparotomy reveals an open perforation through which fecal material continues to discharge, appendectomy aids the defensive mechanism of the body by preventing further peritoneal soiling, but when the perforation and the appendix have been sealed off by surrounding intestine and omentum, removal of the appendix, by breaking down the already established defensive measures of the body, may do more harm than good.

If there is any doubt about perforation we do an exploratory laparotomy, for we feel that the damage done by exploratory laparotomy, with or without appendectomy, is far less than that incurred by allowing an unruptured appendix to go on to perforation. The majority of patients with generalized peritonitis of appendical origin exhibit generalized abdominal pain and tenderness, absence of peristalsis on auscultation, rebound tenderness referred to the point of palpation of the left side of the abdomen, tenderness on both sides on rectal or vaginal examination, and distention. In some patients, however, particularly after localization has begun, one or more of these may be absent and the diagnosis of appendical peritonitis may be extremely difficult to make except by exploratory laparotomy. The converse may occasionally be true, for a patient whose appendix has not ruptured may present signs and symptoms suggestive of appendical peritonitis. This has been observed particularly of patients entering the hospital within 24 hours after the onset of their disease, and we have come to feel that the patient with acute appendicitis who enters the hospital within 24 hours of the onset is better treated by exploratory laparotomy and, almost without exception, removal of the appendix, regardless of the presence or absence of the clinical signs of perforation and generalized peritonitis.

In those patients with acute appendicitis in whom distention and generalized abdominal tenderness develop within 24 hours, the symptoms in my experience have been due more frequently to peritoneal exudate and vigorous catharsis than to gross perforation of the appendix. Another reason for urging appendectomy for these patients is the fact that if the appendix becomes ruptured within 24 hours the peritoneal cavity has had little time to combat such gross contamination and is poorly prepared to localize the infection. Operation in these circumstances usually shows an open perforation which continues to discharge fecal material, in contradistinction to those occurring from 72 to 96 hours after the onset of symptoms, which are usually largely sealed by omentum or surrounding intestine.

Two patients in this series entered the hospital with a diagnosis of peritonitis of appendical origin. Clinical and x-ray studies on these patients prior to operation showed the presence of pneumonia and peritonitis. Both patients had their appendectomy performed under continuous spinal anesthesia, as advocated by Lemmon[3]. The progress of these patients is shown in Figs. 1 and 2.

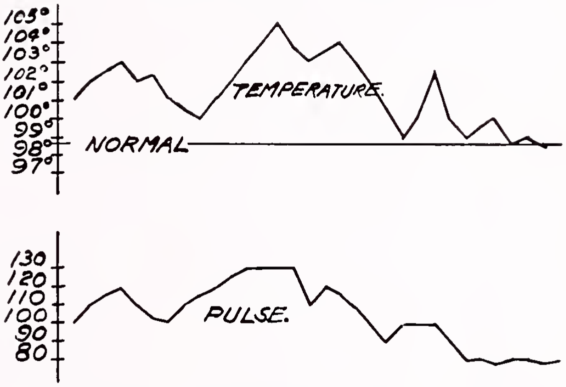

Fig. I—Clinical chart of patient with Peritonitis and Pneumonia.

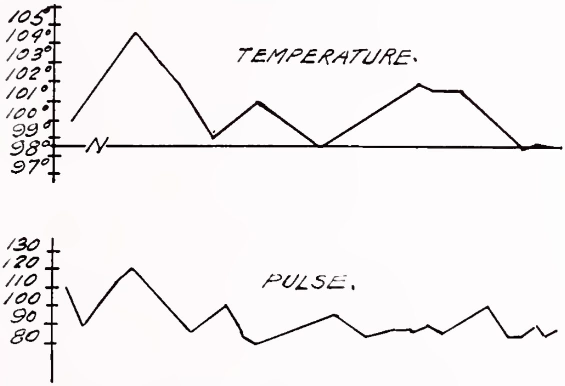

Fig. II—Clinical chart of patient with Peritonitis and Pneumonia.

A constant search for intraperitoneal abscesses is a part of the treatment of appendical peritonitis. While these may form in many portions of the abdomen and pelvis the most serious and the most difficult to detect are those formed in the subphrenic space. The mortality following the formation of a subphrenic abscess has always been very high, the greater number being found on the right side. Fortunately, only a small number of cases develop a left subphrenic abscess, and the mortality rate from this complication is extremely high. One patient, a boy of 8 years, developed a left subphrenic abscess which required a subcostal extraperitoneal incision and drainage. The convalescence and outcome is shown in Fig. 3.

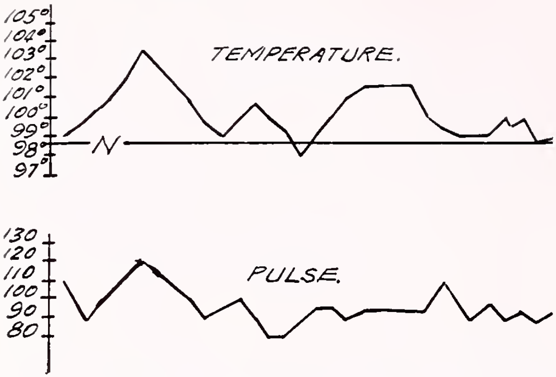

Fig. III—Clinical chart of patient with subphrenic abscess.

The appropriate treatment of secondary intraperitoneal abscseses is highly important. Many of these secondary abscesses will subside spontaneously. This has been my experience in the majority of cases. Delay in operation is our choice, with incision and drainage only in those cases presenting a severe toxemia with a rising pulse and increasing fever.

The postoperative treatment of these cases was definite, and was directed toward increasing the immunity of the peritoneum, improving the patient's resistance, preventing and relieving distention, diminishing intestinal activity, and localizing the disease.

The position of the patient in bed is very important. All of our cases were placed in Fowlers' position. This aids in the localization of the infection in the pelvis, where abscesses are more easily detected and drained. Breathing is made easier in this position, and the vital capacity is also increased. Breathing exercises are always used in these patients.

We apply heat to the abdomen in the majority of such cases. According to Oschner[4], heat tends to decrease the incidence of ileus. Most patients feel more comfortable with the application of heat to the abdomen. Warm stupes are used rarely.

The use of decompression by means of an indwelling duodenal tube with suction, such as the Miller-Abbott tube or the more recent Harris tube, is used in every case. This provides physiologic rest for the gastro-intestinal tract. Decompression empties the bowel of secretions and gas until normal peristalsis returns. This is the most effective method of treating the vomiting and distension associated with peritoneal infection.

Maintenance of a proper fluid, electrolyte, protein and vitamin balance is an individual problem. Blood and plasma transfusions were administered to meet individual requirements in which anemia and hypoproteinemia were factors. Five per cent glucose solutions in normal saline, alternating with distilled water, was utilized by the continuous drip method, giving nothing by mouth in the severe cases.

Morphine was routinely administered. Orr[5] concludes that morphine stimulates rhythmic contractions of intestinal muscle and raises the muscle tone as evidenced by increased intraluminal pressure. However, this same author[6] in a later report concludes that morphine may be given with assurance in the treatment of peritonitis not only to increase muscle tone but to make the patient comfortable, promote rest, relieve anxiety, and minimize thirst.

Oxytocic drugs such as prostigmine, pitressin, etc., were avoided. We believe this therapy might prove harmful in the treatment of ileus associated with peritonitis. The utilization of decompression seems more desirable under these circumstances with less possibility of bowel damage and spread of infection.

Clinical and experimental studies during the past several years have demonstrated the value of sulfonamides in the treatment of appendiceal peritonitis. In 1943[7] we reported a group of cases showing the beneficial effects of sulfathiazole. We have continued to use sodium sulfathiazole intravenously in many of these cases. For several years the local intraperitoneal implantation of sulfanilamide was used, but more recently we have discontinued this practice. There is no doubt, however, that sulfathiazole by the intravenous route has definitely contributed to the success of these operations.

During the past year we have been using penicillin in the majority of cases, either alone or in combination with sulfathiazole. Very little is known concerning the therapeutic possibilities of large doses of penicillin. Laboratory experiments indicate that the E. coli is not susceptible to treatment with penicillin, but clinical evidence is accumulating showing that large doses are effective in controlling mixed infections. By controlling these other organisms penicillin may control peritonitis or keep the infection from spreading. The usual therapeutic dose of 25,000 to 50,000 units of penicillin is inadequate in the treatment of peritonitis. Our usual procedure is a starting dose of 100,000 units, reducing the dosage in accordance with the clinical improvement of the patient. This high initial dosage is important in mixed infections so that the penicillin-neutralizing action of the E. coli can be overcome.

The slow reduction of penicillin is also important because if discontinued abruptly the infection usually recurs. Large doses may prevent the development of secondary localized intraperitoneal abscesses. The intramuscular route was used in the majority of my cases, but the intravenous route was used in the very toxic cases. In a recent study Green and Alture-Weber[8] found that the intraperitoneal installation of penicillin was followed by significant bacteriostatic concentrations of the antibiotic in the blood. They concluded that penicillin was of prophylactic value against infections of abdominal origin.

Shafiroff[9] in a more recent article studied the rate of absorption of penicillin through the peritoneum into the blood stream in 22 normal patients. Penicillin appeared in significant quantities in the blood for a period of about five hours after its instillation in the abdomen.

Intraperitoneal implantation of penicillin was not utilized in this series. That the mortality and morbidity rate might still be more favorably influenced by this procedure is still in doubt. Our results during the past year have clearly demonstrated the value of penicillin by the intravenous or intramuscular route as an adjuvant to surgery in the treatment of appendiceal peritonitis.

A significant feature of modern surgery is the widespread interest and activity displayed in the investigation of the causes of postoperative morbidity and mortality. As a result, new principles, methods, and therapeutic suggestions have arisen. We have followed the suggestions that influence the operative mortality and the postoperative morbidity. Today the uncertainty of surgery in appendiceal peritonitis has been changed to an operative procedure with a much greater margin of safety.

There is no more distressing situation in surgery than that associated with peritonitis of appendiceal origin. There is no result in surgery which is more gratifying than the successful relief of this condition, but success calls for good surgical judgment and technical skill.

Conclusions

1. A series of 100 cases of peritonitis of appendiceal origin, without a mortality, is presented.
2. Sound surgical judgment and technical skill are important factors in the management of peritonitis.
3. Surgery combined with chemotherapy has reduced the mortality and morbidity.
4. Rigid adherence to surgical principles must be followed when chemotherapy is employed.

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TREATMENT OF AN OBSTINATE CASE OF AEROBACTER BACILLURIA WITH STREPTOMYCIN [*]

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The introduction of a new antibiotic, streptomycin, which has proved effective in vitro against certain pathogenic gram-negative rods, has only recently been followed by clinical trial. The total published clinical data, at the time of writing, on the use of streptomycin in infections (other than tuberculosis) has been recently increased to 82 cases, with reports of 45 by Herrell and Nichols[1]; 30 by Reimann, et. al[2]; and 7 by Foshay[3].

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In the experience of two of these authors, streptomycin proved effective in the treatment of urinary tract infections caused by susceptible strains of some gram-negative rods. Herrell[1] reports results which he considered good in 10 of 13 cases of this type of infection, but commented that "best results are most likely to be obtained when the organism of infection is either *Proteus ammoniae* or *Aerobacter aerogenes.*" Reimann[2] reports that "streptomycin in adequate dosage promptly suppressed or eliminated *B. pyocyaneus, B. proteus morganii* and *E. coli* from the urine of several patients but only when these bacteria were of strains susceptible to the amounts of streptomycin present in the urine."

Since the evaluation of any new drug must await extensive clinical trial, the following case is presented as an addition to the above series.

CASE REPORT

A 77-year-old white, male patient first sought medical attention in June, 1945, at which time he underwent a suprapubic prostatectomy for relief of urinary frequency and retention. Postoperative recovery and convalescence was apparently uneventful.

The first admission to the Delaware Hospital was on September 18, 1945, for urinary frequency and dysuria of approximately two weeks duration. Physical examination was essentially negative. Urine was cloudy-amber in appearance, acid in reaction, with a specific gravity of 1.016, plus 1 albumin, and 20-30 W. B. C.'s per hpf with numerous bacteria visible on microscopic examination. Urinary culture revealed a mucoid *Aerobacter aerogenes* and non-hemolytic *Streptococcus fecalis.* A urine sediment smear was loaded with gram-negative rods and a few gram-positive cocci in short chains. Patient was given 40,000 units of penicillin intramuscularly q. 4 h. for a total of 2.4 million units, a urinary antiseptic for 28 days, and sulfathiazole for 14 days, (total 21 gm.). Bladder irrigation was performed daily for 28 days with a solution of 1:8000 $KMnO_4$ and instillation of one ounce of a mild silver protein. Patient was discharged October 16, 1945, with a slight clinical improvement, but with an unchanged laboratory picture of the urinary infection.

On October 25, 1945, patient was re-admitted with repeated urinary symptomatology and arthritic-like pains in knee, ankle, elbow, and shoulder joints. Diathermy treatment applied to involve extremities; and the following therapy was carried out: Thiamine chloride 100 mg. daily, testosterone propionate 10 mg. a. o. d., and bladder irrigation q. o. d. with 1:8000 solution $KMnO_4$ followed by instillation of one ounce of a mild silver protein. An intravenous program during this admission showed normal kidneys. Urine was cloudy-yellow, alkaline, specific gravity of 1.015, albumin plus 1, and 10-15 W. B. C.'s per hpf. Patient was discharged on November 10, 1945, unimproved.

Patient re-admitted December 12, 1945, complaining of arthritic pains and urinary distress as on previous admission, and was given theelin capsules one q. i. d., a urinary antiseptic, testosterone propionate ampule one twice weekly, gold salt 5 mg. once weekly, and penicillin 40,000 units q. 4 h. for a total dosage of 1.8 million units. Patient was discharged on January 7, 1946, unimproved.

Patient was again re-admitted on January 27, 1946, with repeated urinary and arthritic complaints. Urinalysis and urine culture showed a continued picture of urinary infection with a mucoid *Aerobacter aerogenes.* All medication was withdrawn from patient and treatment began with streptomycin.

TREATMENT PLAN

7.0 grams* of stretpomycin sulfate was obtained**, 0.5 grams per ampule. At daily intervals, contents of one ampule was dissolved in 10 cc. of sterile physiological saline (equivalent to 50 milligrams per cc.) and 400 milligrams of this injected intramuscularly every 4 hours for the entire treatment period. Blood was obtained for streptomycin levels, and catherized urine was obtained for culture, at intervals indicated (Chart I). The invading organism was a mucoid *Aerobacter aerogenes,* which showed an *in vitro* sensitivity of 0.3 micrograms of streptomycin per cc.

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* Pure crystalline streptomycin base, the activity of which was formerly designated in units, is now expressed in terms of weight. For practical purposes, 1 unit is the antibacterial activity of 1 microgram (0.001 milligrams), therefore 7 grams is the equivalent of 7 million micrograms, or 7 million units.

** Through the courtesy of Dr. H. Sidney Newcomer, E. R. Squibb & Sons, N. Y. C.

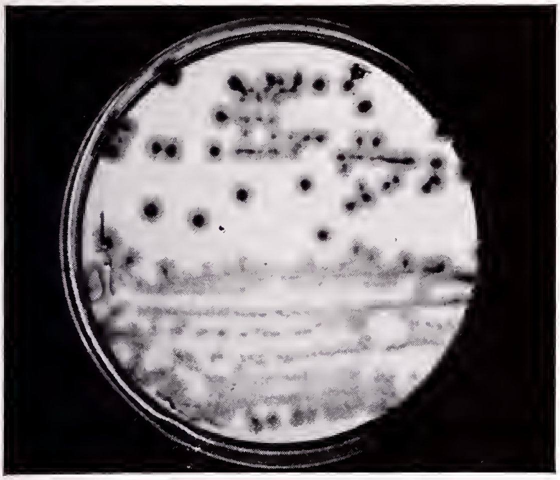

Fig. I—EMB plate streaked with urine sediment before treatment with Streptomycin. Note the large mucoid colonies of A. aeragenes. (½ actual size).

Initial Laboratory Findings

Stained Urinary Sediment: Loaded with pus cells and gram-negative rods.

Culture. Mucoid Aerobacter aerogenes.

Complete Blood Count: RBC 4.4 million; Hemoglobin 13 grams, 83%; WBC 8,900; Differential-Polys 78%; Lymphocytes 20%; Monocytes 1%; Eosinophiles 1%.

Blood Urea Nitrogen: 15.8 mg.%.

Total Serum Protein: 5.1 gm.%.

Sedimentation Rate: 22 mm. in 1 hour.

CHART I

LABORATORY FINDINGS DURING TREATMENT

Date	Total Drug Given (grams)	1 Hour Serum Level* (Micrograms/cc)	Laboratory Tests
1/28	0.4	40	
1/29 A.M.	2.4	50	Stained Urinary Sediment: Negative. Culture: Negative after 48 hours.
1/29 P.M.		55	Blood Urea Nitrogen: 13.8mg.% Plasma Chlorides: 572 mg.%
1/30 A.M.	4.4	55	Stained Urinary Sediment: Negative. Culture: Negative after 48 hours.
1/30 P.M.		58	
1/31 A.M.	6.8	55	Stained Urinary Sediment: Negative. Culture: Negative after 48 hours.
2 /1 A.M.		25	
2 /2		0	Sugar: 107 mg.% Blood Urea Nitrogen: 18.5 mg.%
2 /6		0	Stained Urinary Sediment: Negative. Culture: Negative after 48 hours.

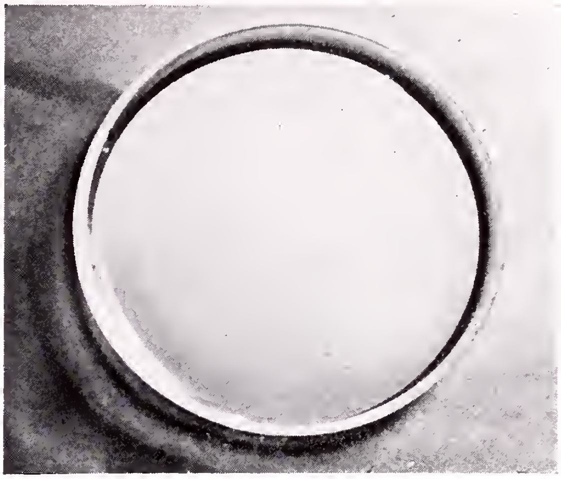

Fig. II—EMB plate streaked with urine sediment after treatment with Streptomycin. Note the absence of growth. (½ actual size).

Discussion

In brief, the foregoing material presents the picture of a 77-year-old, white male patient suffering with arthritic pains and a urinary frequency and dysuria due to urinary tract infection by *Aerobacter aerogenes.*

Over a period of six months the patient was treated with courses of penicillin and sulfathiazole therapy; a urinary antiseptic; bladder irrigation with $KMnO_4$ and mild silver protein instillation; diathermy; thiamine chloride; testosterone propionate; and gold salt medications. All of this therapy was of little or no avail in alleviating the patient's symptoms or improving the laboratory picture of the infectious process.

A course of treatment of 6.8 grams of streptomycin sulfate was given in divided dosage, over a period of 72 hours. Before completion of the instituted therapy, a sterile urine culture was obtained, together with mitigation of the clinical urinary complaints. The final result was a patient free of urinary tract symptomatology, and an amelioration of his arthritic pains.

Summary

1. A case of long-standing urinary tract infection due to *Aerobacter aerogenes* is presented.
2. The organism was resistant, *in vivo,* to penicillin, sulfathiazole, and common urinary antiseptics, but sensitive, *in vitro,* to 0.3 micrograms of streptomycin per cc.

---

* Performed by R. H. Fowler, Bacteriologist, Abington Memorial Hospital, Pa., using Stebbins and Robinson technic 4.

3. A prompt bacteriological cure was effected by the parenteral administration of 6.8 grams of streptomycin sulfate, given over a 72 hour period. Substantial blood levels were attained.

4. Apart from the local discomfort of intramuscular injection, there was no serious or uncontrollable toxic effect from the use of streptomycin in this case.

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ROCKY MOUNTAIN SPOTTED FEVER: A Case Treated With p-Aminobenzoic Acid*

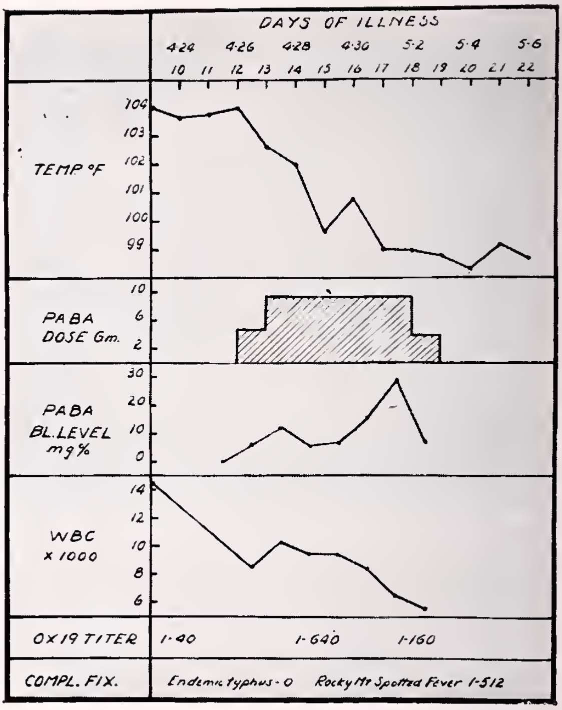
J. W. Maroney, M. D., H. C. Davis, M. D.,
and E. G. Scott, M. T.,
Wilmington, Del.

Rose and his co-workers[1] were the first to report a human case of Rocky Mountain spotted fever treated with benefit by p-aminobenzoic acid. This clinical report followed the experimental work of Anigstein and Bader[2] and Hamilton[3] who reported that the drug proved therapeutically effective in guinea pigs infected with Rocky Mountain spotted fever rickettsias. The drug inhibited these rickettsias in chick embryos to an even greater extent than typhus rickettsias.

Recently it was our opportunity to observe a clincal case of this disease, and treat it with p-aminobenzoic acid. Administration of the drug 12 days after onset was followed by a prompt defervescence of the temperature, signs and symptoms, and no toxic manifestations were observed. This case is therefore presented as an incentive to further studies of the use of p-aminobenzoic acid in this disease.

Case Report

S. H., a three-year-old colored female, was admitted to the pediatric service on April 23, 1946. Eight days prior to admission she had suddenly developed a fever of 104 F. A diagnosis of grippe was made, and a sulfonamide was administered without effect on the fever. Three days later a rash was noted on the thighs, hands and wrists, spreading to the trunk. The face was not involved. The rash was first considered to be a reaction to the sulfonamide. The child showed weight loss, constipation, anorexia, irritability and prostration. No history of tick bite could be elicited. The child, however, lived in a tick-infested area, and spent most of her time playing out of doors, sometimes walking in the tall grass of a near-by playground.



Course of Disease.

On admission, the patient was irritable, and cried easily when disturbed. The temperature was 104 F. by rectum, the pulse 160, the respirations 32, and the blood pressure was 109 systolic and 74 diastolic.

The skin was hot and dry, with a purpuric rash over the extremities and trunk. The individual lesions were discrete, averaging 1-3 mm. in diameter, purplish-red in color, appeared to be deep rather than superficial, and blanched readily on pressure. The face was essentially uninvolved. There was generalized lymphadenopathy. The lips were bleeding slightly, the buccal mucosa was clear. The heart and lungs were normal, the liver slightly enlarged to percussion. While the rash most closely resembled a rickettsial infection, both a toxic purpura and a meningococcemia were considered in the differential diagnosis.

---

* From the Departments of Pediatrics and Pathology, Delaware Hospital.

On admission the blood count showed 3.8 million RBC, 10 gm. hemoglobin 14,400 WBC, 75% polys, and 244,000 platelets. Urinalysis showed a 1 plus albumin and 8-15 WBC/HPF. A lumbar puncture showed a clear colorless fluid under increased pressure, with normal protein and chlorides, and 28 cells per cu. mm. (predominately mononuclears). No organisms were seen in the stained sediment, and cultures remained sterile for 72 hours. No growth occurred on aerobic or anaerobic blood cultures after 10 days incubation. Febrile agglutinins were negative for typhoid, paratyphoid and brucella antigens, and positive with proteus OX19 antigen thru a titer of 1:40. A clinical diagnosis of Rocky Mountain spotted fever was then made. For further confirmation, the patient's serum was submitted to Dr. Charles Armstrong, Chief, Division of Infectious Diseases, National Institute, Bethesda, Md., on April 28th (14th day of illness) for rickettsial studies. Dr. Armstrong reported that complement fixation tests with endemic typhus antigens were negative, but showed a positive titer of 1:512 or higher, with Rocky Mountain spotted fever antigen. He reported further that the patient's serum agglutinated proteus OX19 antigen thru a titer of 1:640. A repeat OX19 agglutination was performed by us on May 1st (17th day of illness) and the titer had risen from 1:40 to 1:160.

Therapy with p-aminobenzoic acid was started three days after admission (12th day of illness). The method of administration is reported in detail. The drug was prepared in packets containing an initial dose of 1.3 grams, and subsequent doses of 0.8 grams each. These, along with a large bottle of 5% sodium bicarbonate, were sent to the ward with instructions to dissolve each packet in one-half ounce of chilled bicarbonate solution, this dose to be given orally every two hours. The dosage was intended to approximate one-third of that used by Yeomans[4] and Rose in an adult, in an attempt to maintain a blood level of 10-20 mg.%. P-aminobenzoic acid is relatively insoluble in water and quite soluble in 5% sodium bicarbonate, but considerable difficulty was encountered in administering it to a three-year-old patient. At the suggestion of Dr. C. W. Todd, Chemical Consultant to the Department of Pathology, 0.8 grams was found to be somewhat soluble in one ounce of orange juice at room temperature, provided it was prepared about two hours before administration. This was given with some degree of success, but Levine tube administration was finally resorted to. After several such feedings the patient took the oral dose without further difficulty, probably coincident with decreased irritability and general improvement in her condition.

Daily p-aminobenzoic acid blood levels, leukocyte counts, hemoglobin estimations, and urinalyses (when obtainable) were performed while the drug was being administered. The technic for p-aminobenzoic acid was modified by Dr. Todd from the Bratton & Marshall method for sulfonamide estimation, using 0.2 ml. of blood obtained by finger puncture. These levels ranged from 5.1 to 29.1 mg.%. The white count fell from 14,400 to 8,500 in 72 hours after medication was initiated, and remained within the normal range thereafter. Urine specific gravities varied from 1.012 to 1.019, and a 1 plus albumin persisted during treatment, with a normal urinalysis at discharge. Hemoglobin values ranged from 10 to 8.1 gm.

On the second day of p-aminobenzoic acid therapy, the temperature, which had ranged from 102 to 104 F., fell to normal, with some fading of the rash. On the third day the rash had faded markedly, changing from purplish-red to sandy brown. The drug was continued for eight days without any apparent toxic manifestations. Clinical improvement accompanied the falling temperature, and the childs' appetite and good spirits were rapidly regained. The patient was discharged in good health on the fourteenth hospital day.

Comment

The recovery of this child with clinically typical and serologically demonstrated Rocky Mountain spotted fever following administration of p-aminobenzoic acid was most dramatic. In an area where this disease presents a constant menace during the tick season, we have not previously seen so abrupt a defervescence of symptoms. While we cannot draw conclusions from an isolated case, it was our clinical impression that recovery was enhanced by the drug, and that it merits further trial.

Summary

A case of Rocky Mountain spotted fever treated with p-aminobenzoic acid is reported, with an apparent beneficial effect.

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NEW LIGHT ON FILTERABLE VIRUS

The filterable virus, probably mans' most deadly enemy, is a highly complex structure.

New light on the nature of the almost infinitesimally minute things which are responsible for some of the most dreaded human and animal diseases has been obtained from studies at Duke University, according to a report just made to the Office of the Surgeon General of the Army under whose direction experimental work was conducted during the war.

The viruses have diameters of only a few millionths of a millimeter. They are far below the limits of the most powerful optical microscope. Through use of the electron microscope and microchemical techniques, however, it was possible for the Duke investigators to obtain considerable information.

They are so minute that there has been some question as to whether they are actual living things, or large molecules somehow endowed with the ability to reproduce themselves.

But, says Dr. Joseph W. Beard who was in charge of the Duke investigations under the Army: "These particles cannot be molecules. They are of very complex structure and apparently are enclosed in a membrane."

The studies were made on two viruses—one of which causes a disease of rabbits known as papilloma and the other the human malady vaccinia—and one of the bacteriophages, which are quite similar organizations. These were simpler to study than the influenza viruses which were the ultimate objectives of the Duke investigations. It was felt that any knowledge of viruses in general ultimately might prove of value.

The bacteriophage especially looked like an ultramicroscopic tadpole. It has a well-defined head and a stubby tail. The papilloma virus was spheroidal in shape while the vaccinia organism was like a flattened disc with denser internal material bulging beneath the surface of its "skin."

Other tests showed that these viruses were a little more than half water. The chemical composition of the bacteriophage consisted of a mixture of proteins and lipoids, or basic constituents of fats, in association with a high content of nucleic acids, very complex compounds found in the nucleii of all living cells. The chief element was carbon—about 42 per cent. There also were considerable amounts of nitrogen and phosphorus. The diameter of the papilloma virus was found to be about 45 thousandths of a millimeter.

The work has just been reported through the Army Epidemiological Board.

We give our medical students innumerable facts from which they should infer that the periodic health examination is important. Yet, partly because we do not carry this education through to its behavior aspects as related to them, physicians themselves seldom have such examinations. They are more likely than most people to develop active tuberculosis, and have little advantage over others in recognizing an early case in themselves. Yet how few have periodic X-rays. Those who smile self-righteously at the physicians might reflect, however, that the failing is common elsewhere. Some time ago the Minnesota Supreme Court, in handing down an opinion, remarked that lawyers, although recognizing the dangers common when no will has been made, notoriously seldom have made wills themselves.—Carl J. Potthoff, M. D., *Amer. Jour. P. H.*, Oct., 1945.

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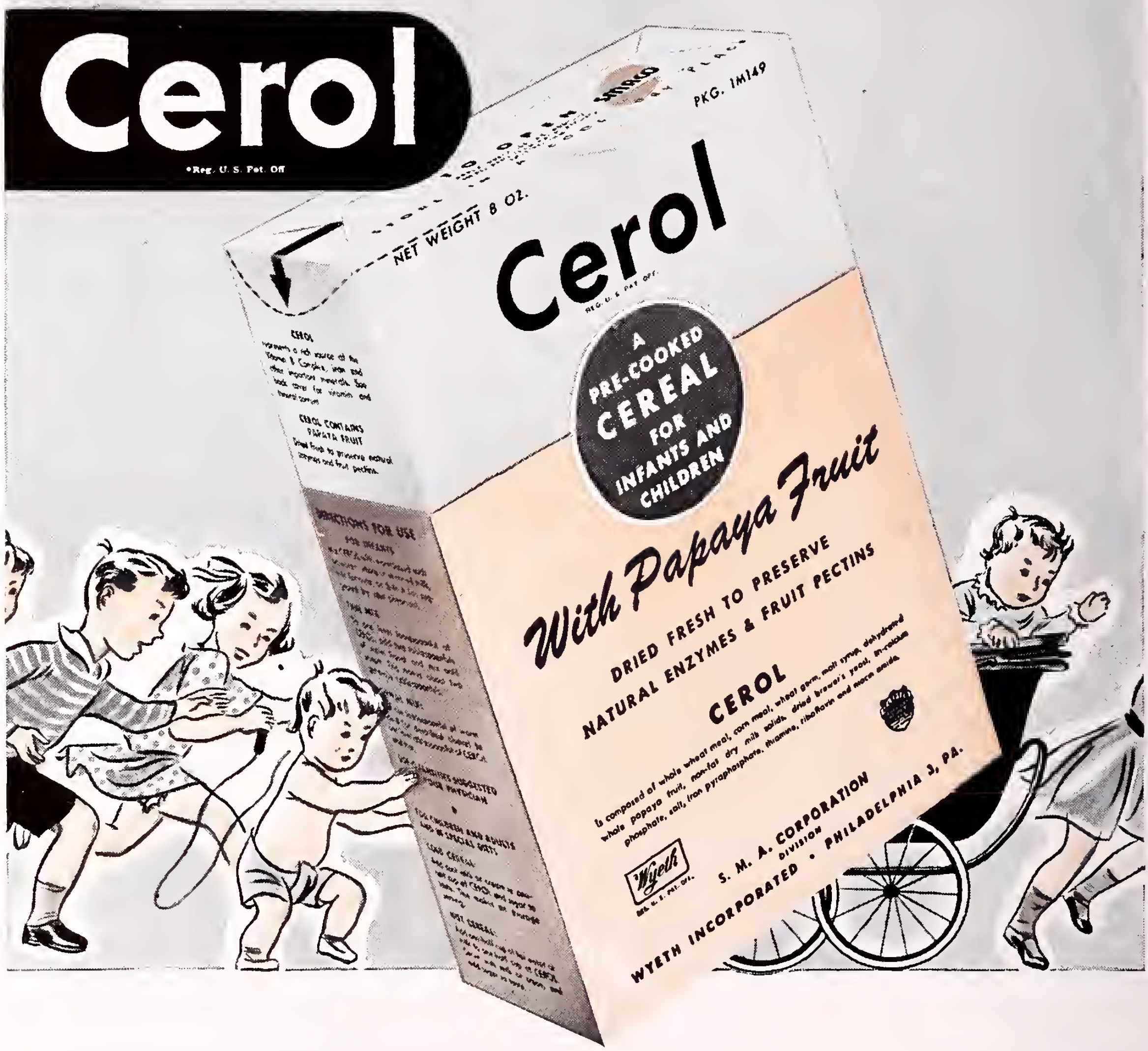
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Vol. 18 May, 1946 No. 5

Re: By-Laws

Revision of the By-Laws of the Medical Society of Delaware, which was initiated by the House of Delegates in 1941, was later held in abeyance by order of the House, till the large percentage of our membership who went into the services returned. That glad day is about here, there being only a comparatively small number of our men yet to return. Hence the time to begin work on this much-needed revision has also nearly arrived. We have the assurance of the Bureau of Legal Medicine of the American Medical Association that whenever we are ready to proceed they will send a representative here to advise us. This asistance will be much appreciated, for, with certain peculiar ideas prevailing in the national law-making bodies, there are hidden dangers in writing even such an apparently innocent item as the Preamble, especially in the definition of the purposes of the Society.

It is the hope of the Committee on Revision of the By-Laws to have this matter completed in time to present to the House of Delegates next October.

Likewise, certain changes in the By-Laws of the New Castle County Medical Society have been proposed, and others will be necessitated by the changes in the State By-Laws. When these latter have been made, it is hoped to complete the County By-Laws before the end of the year. It is almost certain that the Kent County and Sussex County Societies will also find the necessity of adjusting their present By-Laws to the new State ones. Thus, by the end of this year the State Society and its component county societies will have revised and modernized their By-Laws, a long overdue task.

Health and Accident Insurance

Recently the Kent and Sussex County Medical Societies have jointly contracted with a commercial carrier for a group policy for health and accident coverage. There are certain advantages in a group contract not available to the individual subscriber, and a sufficiently large percentage of the membership of the Kent and Sussex Societies subscribed to justify a group contract.

In the New Castle County Medical Society the Committee on Medical Economics has presented this subject periodically for the past five or six years. However, due to the war and to the fact that a fair percentage of the membership already had this type of coverage, no interest was manifested in a group contract. It was presented again at the April meeting, and the same lack of interest was exhibited. We do believe, though, that the members of this Society should give the matter their serious thought during the summer; in the early fall it will again be presented for their decision.

SOCIALIZED MEDICINE ABROAD

The proponents of socialized medicine, often enthusiasts or even fanatics on the subject, usually try to sugar-coat Government medicine in order to gain converts. They even try to make it attractive to physicians. Sometimes they propose laws under which medical practitioners would receive remuneration better than the average under today's system of free enterprise. Of course, these proponents know that once they get their bills for socialized medicine enacted into law not even dynamite could remove the incubus. (Remember how long it took to get rid of National prohibition and how for so long it seemed impossible to get rid of it.) Once socialized medicine got on the statute books no one would need to be appeased to keep it there; certainly not the physicians who are too small a minority group among the voters to make their opinions felt politically; neither would the politicians need to appease the vast public who are the patients and who would think they were getting medical service for nothing even while paying exorbitant prices for inferior goods.

Great Britain has had socialized medicine for many years. The panel medicine the British public has been receiving has done not one of the good things, such as adequate medical service, which is claimed for socialized medicine but, nevertheless, the failure of this type of medical practice to be anywhere near the equal of untrammeled free enterprise is not bringing about the withdrawal of the Government from medical practice. On the contrary, Britain's Labor Government now demands even greater socialization of medical practice. (One wonders if the proposed loan by the U. S. to Great Britain is to help defray its cost.) The Scottish Daily Express, founded by Lord Beaverbrook, under date of March 22, 1946, has the following news item on the subject, which is quoted in part:

Britain's 56,000 doctors will receive today from the British Medical Association a call to fight Mr. Bevan's plan to nationalize doctors.

B. M. A. officials worked late last night to send the call by post to every doctor, with a copy of the National health service White Paper.

The "Come Out and Fight" campaign will be Nation-wide. Meetings are being arranged all over the country during the first fortnight of next month to challenge—

Conversion of doctors into civil servants.

The new health centres shared by six to ten doctors.

The administrative "badness" of the Bill.

The first big meeting of doctors will be held at Wimbledon Town Hall, London, next Sunday, when Dr. Charles Hill of the B. M. A., will speak to about 200 doctors.

The Bill leaves seven Government departments all operating medical services.

The collapse of the old doctor-patient relationship horrifies many of the doctors. They will warn the people that if the Bill goes through the doctor must work under official approval.

"In the campaign, the public will be told that the Bill means an era of divided loyalties—the patient or the State? The doctor, largely paid by State salary, will bring trouble his way if he fights a patient's claim against the Government."

The B. M. A. hopes to mobilize public opinion against the State control of the hospitals. Its members believe in the local tradition enjoyed by many voluntary hospitals. They consider there is a danger that small but cherished hospitals may be closed in the name of administrative thoroughness.

The B. M. A. is angry over the way Mr. Bevan has dealt with it, and complains that previous Ministers of Health asked the B. M. A. Council for its views on health service questions.

Dr. H. Guy Dain, chairman of the council, said last night: "When Mr. Bevan did see us, he told us—'I shall be grateful for your comments, but I am not proposing to negotiate with you, but I shall take entire responsibility for the form of the Bill.'

"We offered comments, but we have not yet discovered what consideration he gave them or whether they affected his views."

Dr. Charles Hill, B. M. A. secretary, said: "The White Paper suggests that the doctor-patient relationship will not be impaired. That is not accurate. The proposals lead sooner, rather than later, to the doctor becoming a whole-time salaried civil servant.

"We particularly object that a doctor should be directed to a particular area."

Thus it goes. "Let's have socialized medicine," says it proponents, "no matter how far we must go in making concessions to get it. Once we have it, we can mold it to suit our purposes and need pay no attention to objectors." The time to stop socialized medicine is now before it becomes law. If we wait too long we'll probably live with it for the rest of our lives.—Editorial, *Phila. Med.*, May 11, 1946.

BOOK REVIEWS

Gastro-Enterology. By Henry L. Bockus, M. D., Professor of Gastro-Enterology, University of Pennsylvania Graduate School of Medicine. In three volumes, totaling about 2700 pages with about 900 illustrations, many in colors. Volume III—The Liver, Biliary Tract and Pancreas, and Secondary Gastro-Intestinal Disorders. Pp. 1091, with 427 illustrations, some in colors. Cloth. Price (3 vols. and separate desk index) $35.00. Philadelphia: W. B. Saunders Company, 1946.

Volume I of this splendid work was reviewed in The Journal of September, 1943, and Volume II in March, 1944. Now appears the final volume, with separate check index. This one contains 29 chapters contributed by 14 of Dr. Bockus' associates, and 8 others written jointly, leaving 11 chapters exclusively by Bockus. The remarkable thing is the continuity of style—we could not tell whose chapter we were reading.

It would be difficult to point to any chapter that stands out alone, such is the uniform excellence of the whole. While this is primarily a medical text, its surgical advice, even including some technique, represents the best of the surgical thinking of today. These combined features make this work, in our opinion, the outstanding one in its field—we know of nothing in the English language that equals it.

The Management of Fractures, Dislocations and Sprains. By John Albert Key, M. D., Clinical Professor of Orthopedic Surgery, Washington University, and H. Earle Conwell, M. D., Orthopedic Surgeon, Tennessee Coal, Iron and Railroad Company. Fourth Edition. Pp. 1322, with 1318 illustrations. Cloth. Price, $12.50. St. Louis: C. V. Mosby Company, 1946.

When a book is so popular as to require a new edition every four years, it has to be good. Key and Conwell have produced a work that, to hundreds of American physicians, is a veritable Bible within its field. This new edition brings the subject completely up-to-date, including the use of penicillin and other chemical and biological agents. Important changes have been made in the sections on the spine, the hip and compound fractures. To us, the most interesting change is in the section on intervertebral disc, now expanded to eight pages, and one of the best discussions of this sometimes baffling subject, in which the two authors very politely disagree with each other. The authors describe at length the treatments that in their hands have produced the most satisfactory results, which is to say that the text is both practical and dependable.

The volume is too encyclopedic to review in detail, but our old regard for it still persists—text plus illustrations make it one of the really outstanding books in its field.

Preoperative and Postoperative Treatment. Edited by Lt. Col. Robert L. Mason, M. C., A. U. S., Cushing General Hospital, Framingham, Massachusetts; and Harold A. Zintel, M. D., Harrison Department of Surgical Research, University of Pennsylvania School of Medicine; Assistant Surgeon, Hospital of the University of Pennsylvania. Second Edition. Pp. 584, with 157 illustrations. Cloth. Price, $7.00. Philadelphia: W. B. Saunders Company, 1946.

Mason's book, which first appeared in 1937, has been practically rewritten. In addition, new chapters on physical medicine, care of gynecologic, gastric, duodenal and obstructed cases, nutrition, pregnancy, thrombophlebitis, vitamin K and cranial injuries appear. The editors secured 18 other writers to contribute chapters within their special fields of interest, all of which are meritorious. The treatments described are in consonance with the latest concepts of modern physiology, biochemistry, bacteriology and pharmacology.

The book can be recommended without reserve.

Synopsis of Physiology. By Rolland J. Main, Ph. D., Professor of Physiology, Medical College of Virginia. Pp. 341, with 21 illustrations. Cloth. Price, $3.50. St. Louis: C. V. Mosby Company, 1946.

In response to the demand of physicians and senior medical students for "a little book which hits the high spots," Main has hit the main facts of physiology in this little book. Human, rather than animal, data are used wherever possible, and the normal is accentuated by brief references to the abnormal. In order to be as brief as possible, the author claims he has been shockingly dogmatic; if he has been, we seem to have missed it. The style is concise yet readable, and the arrangement convenient. We like this book very much.

Cornell Conferences on Therapy. Edited by Harry Gold, M. D., Assistant Professor of Pharmacology, Cornell University. Pp. 322. Cloth. Price, $3.25. New York: Macmillan Company, 1946.

These conferences were inaugurated in 1937 in an effort to bring pharmacologists and clinicians together, for their mutual understanding and the benefit of the patient. The scope covers the whole range of therapeutics; the aim has been to stimulate interest in rational therapy. They were published in the *Journal of the A. M. A.* from 1937 to 1940, and since that time in the *New York State Journal of Medicine*. The present volume, the first of an annual series, contains 15 conferences selected for their quality and lasting value, among them being: Use and Abuse of Bed Rest; Surgical Measures for the Relief of Pain; Treatment of Heart Failure; Treatment of Subacute Bacterial Endocarditis; Treatment of Poisoning; and the Rh-Factor in Therapy.

This volume, which will interest physicians, even surgeons, in all branches of therapy, is a valuable one. We look forward with anticipation for its successors.

A Bibliography of Infantile Paralysis: 1789-1944. Edited by Morris Fishbein, M. D., Editor, Journal of the American Medical Association. Pp. 672. Cloth. Price, $——, Philadelphia: J. B. Lippincott Company, 1946.

We were intrigued to note that "polio" was first described by Underwood in 1789, the very year that the Medical Society of Delaware, founded in 1776, was incorporated. We were not surprised to note that this bibliography is dedicated to the late Franklin D. Roosevelt. The one thing, perhaps the only thing, he personally licked was "polio," which was a notable victory for him at the time, and later on for all the polio victims, for with his exceptional "gift of gab" he popularized the nation-wide campaign against polio.

The book is excellent, is complete, except for the references to foreign literature during the war years, and includes abstracts of the more important articles. It will be of interest to research writers, to those who are concerned with the literature of polio, and to those who think that the late Roosevelt was the world's greatest symbol of battle against one of the world's greatest scourges.

Synopsis of Pathology. By W. A. D. Anderson, M. D., Professor of Pathology and Bacteriology, Marquette University School of Medicine. Second Edition, revised. Pp. 741, with 237 illustrations and 15 color plates. Cloth. Price, $6.50. St. Louis: C. V. Mosby Company, 1946.

This book is just what it claims to be, a synopsis. Chapter by chapter and paragraph by paragraph the facts are presented in a clear, non-speculative manner. In spite of that, the text reads easily. The book is complete and up-to-date; the bibliography is well chosen; the illustrations are excellent save for the colored photomicrographs.

Several splendid books on pathology and its branches have been published in recent years; they show a healthy tendency to interpret gross and microscopic findings and correlate them with clinical observations. This synopsis is written the old descriptive way. The appearance of a second edition within four years is indicative of the need for this book. It should be helpful as last reading before an examination and as a reference book to the practicing physician.

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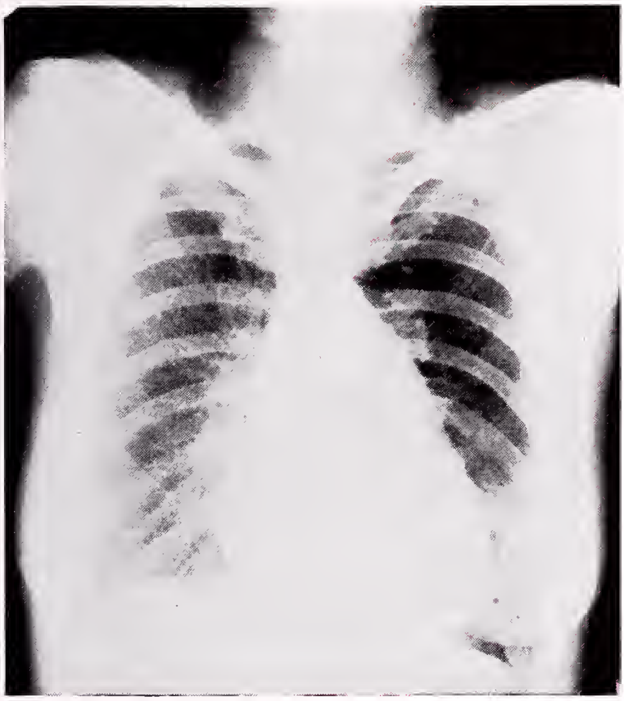

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Proc. Soc. Exp. Biol. and Med., 1934, 32, 241
N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.

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[1] *Stare, F. J., and Thorn, G. W.: Protein Nutrition in Problems of Medical Interest, J.A.M.A. 127:1120 (April 28) 1945.*

[2] *Stare, F. J., and Davidson, C. S.: Protein: Its Role in Human Nutrition; Introduction, J.A.M.A. 127:985 (April 14) 1945.*

[3] *Anderson, G. K.: The Importance of Protein in Diet Therapy, J.Am.Dietet.A. 21:436 (July-August) 1945.*

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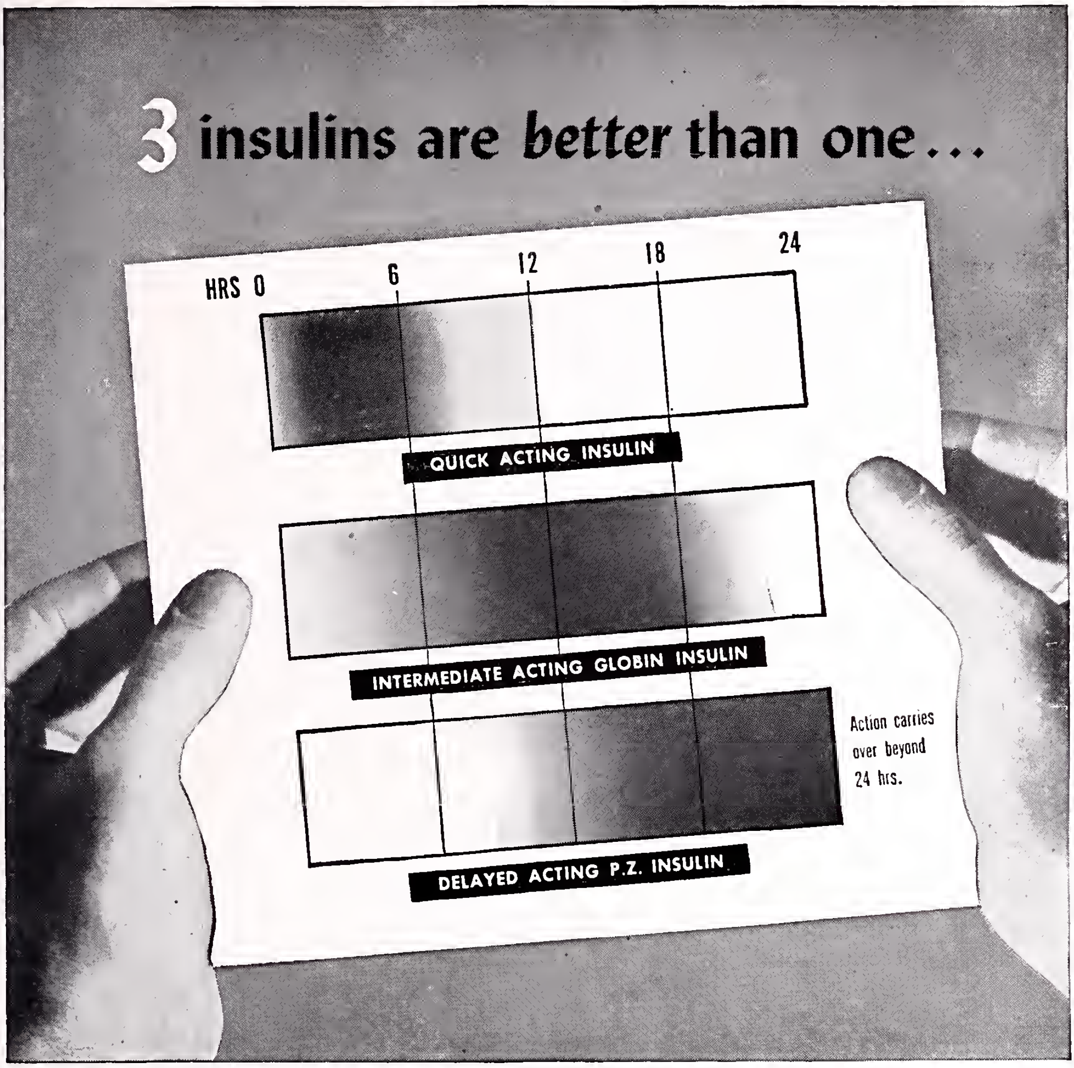

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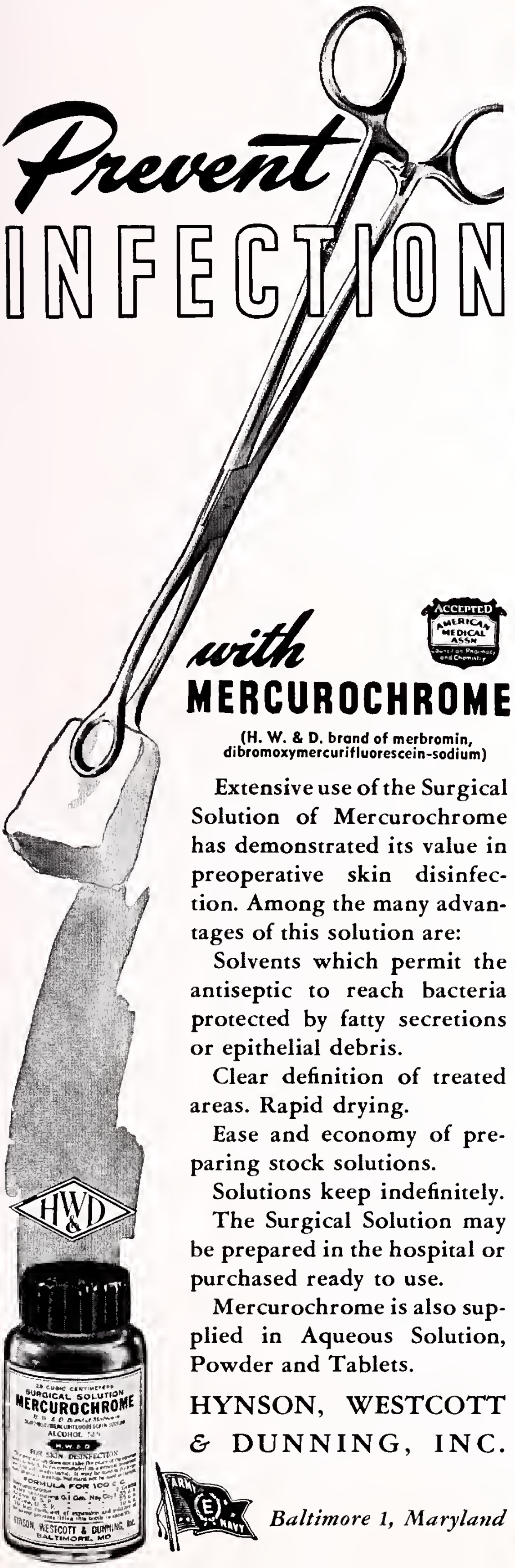

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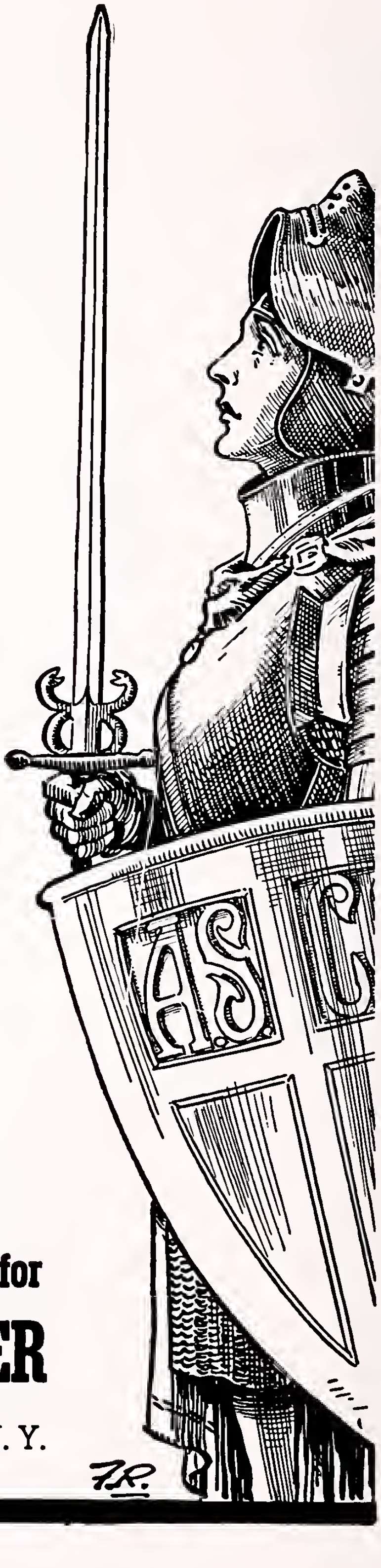

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1. Virginia M. Monthly 72:240 (June) 1945.

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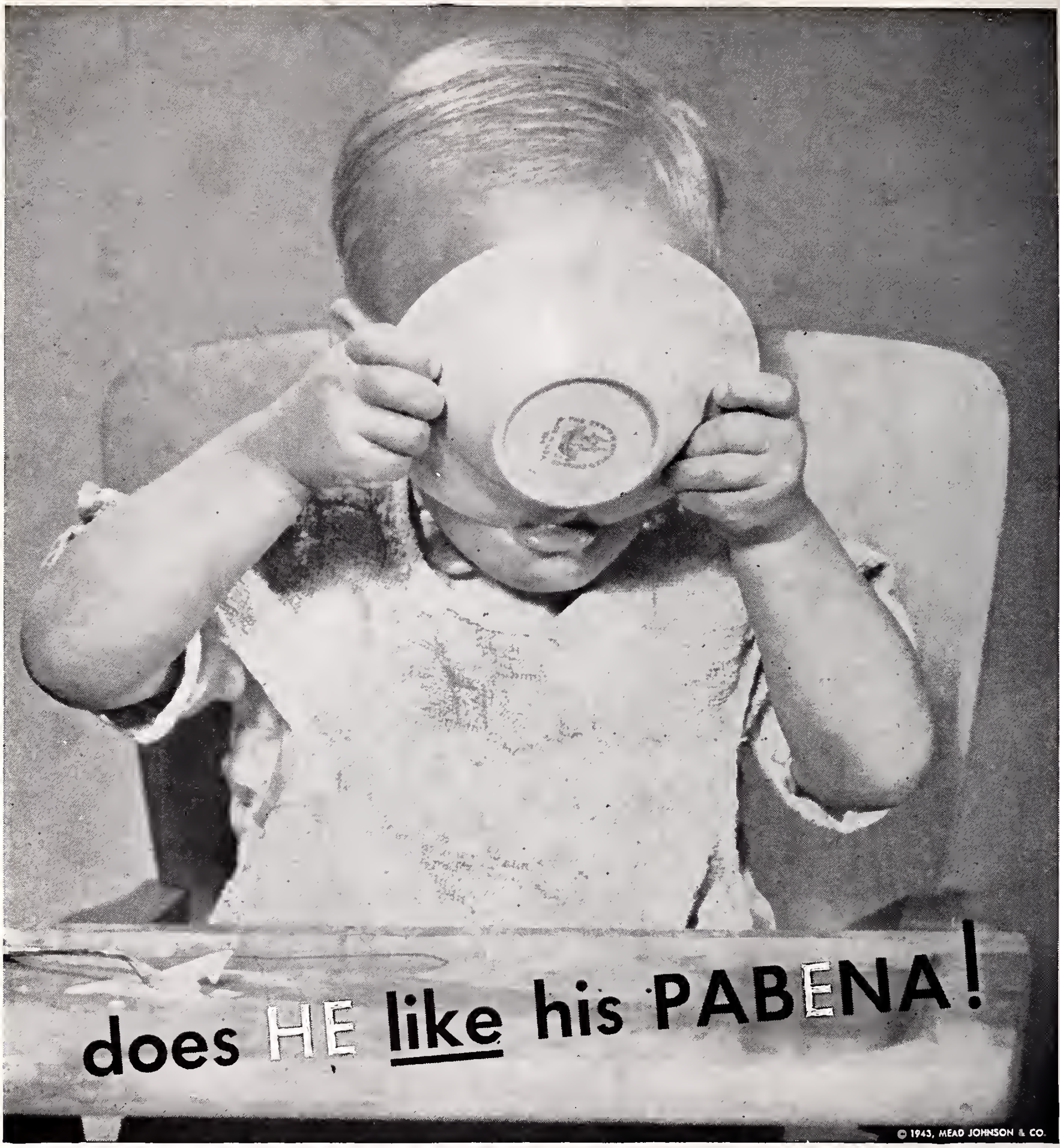
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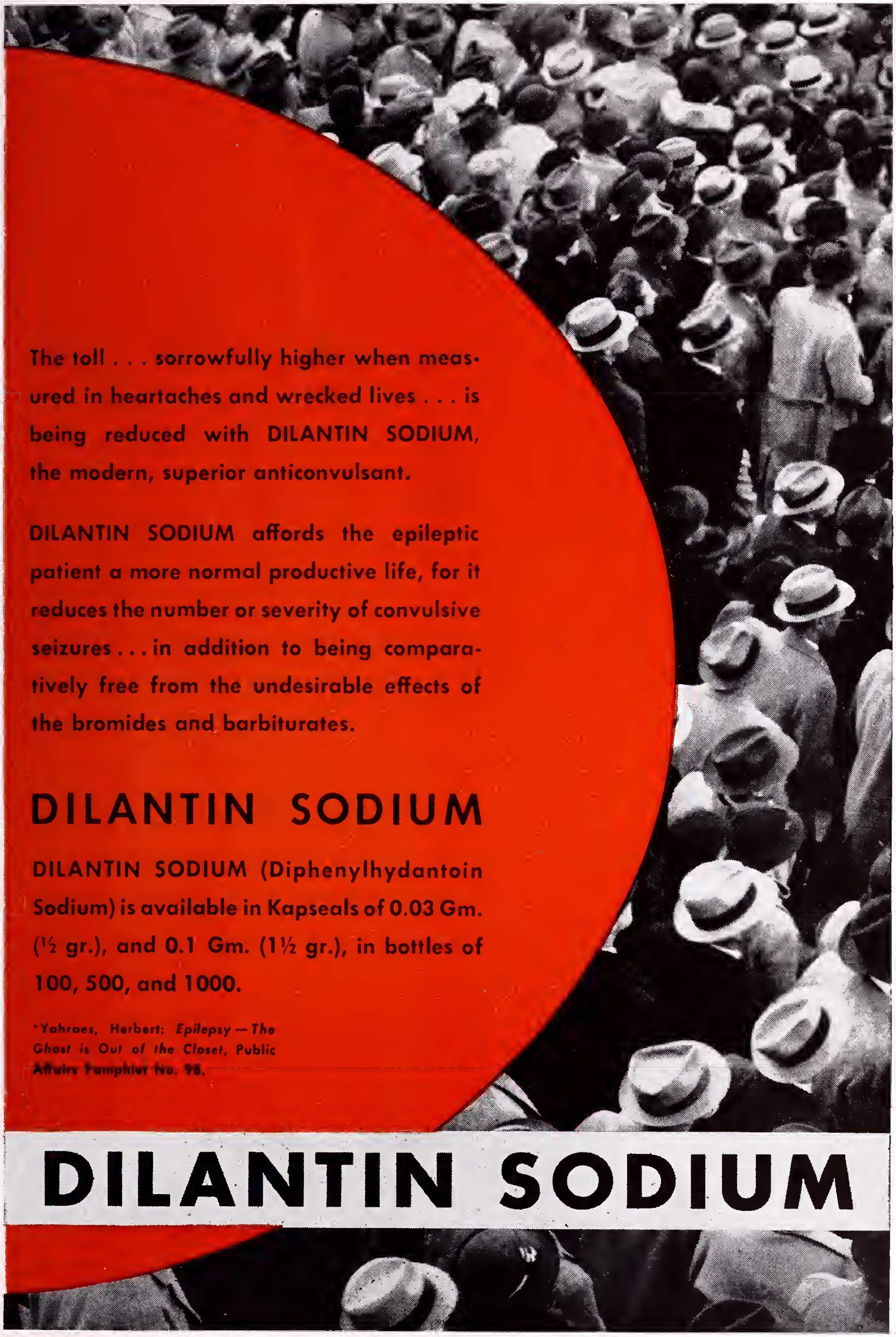

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*Yahraes, Herbert: *Epilepsy — The Ghost is Out of the Closet*, Public Affairs Pamphlet No. 98.

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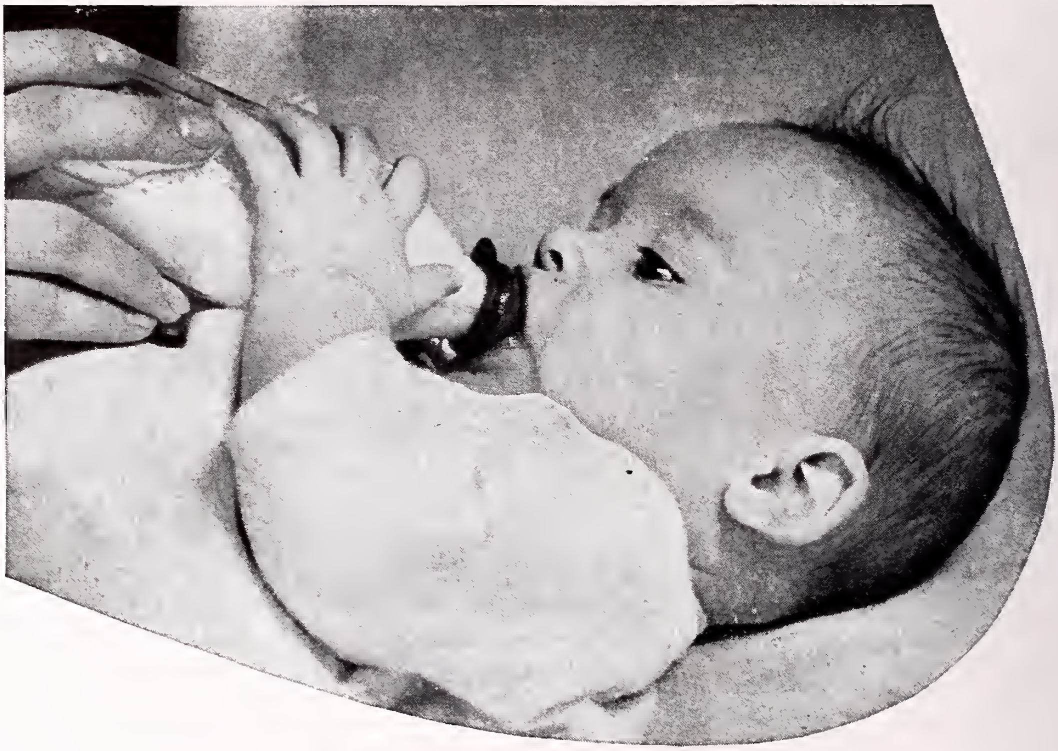

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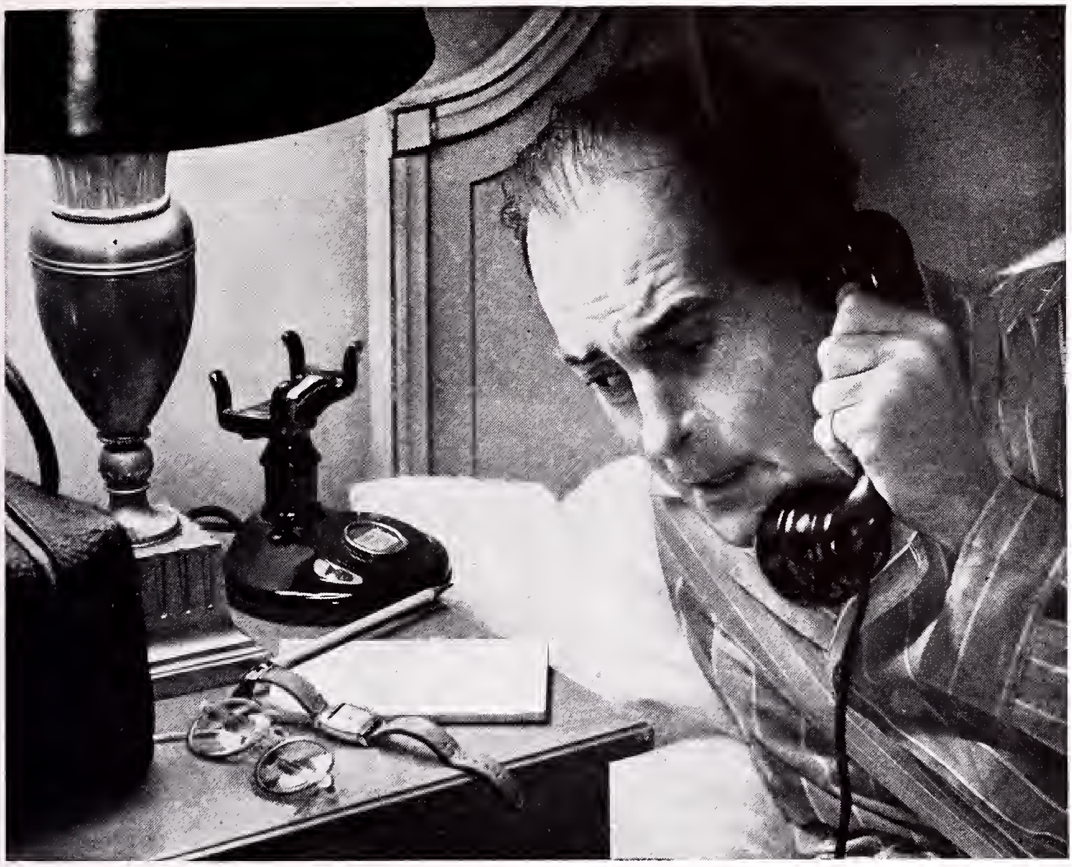

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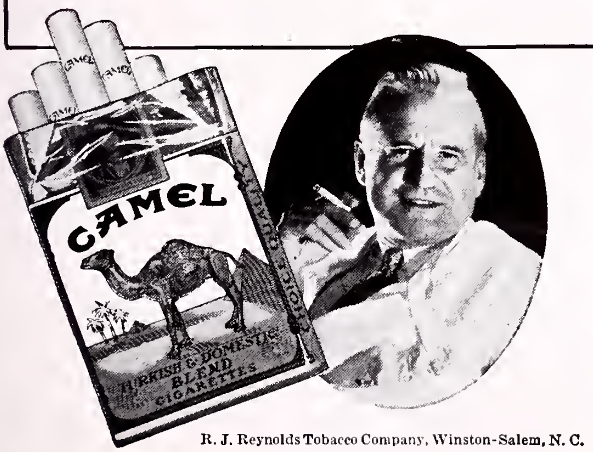

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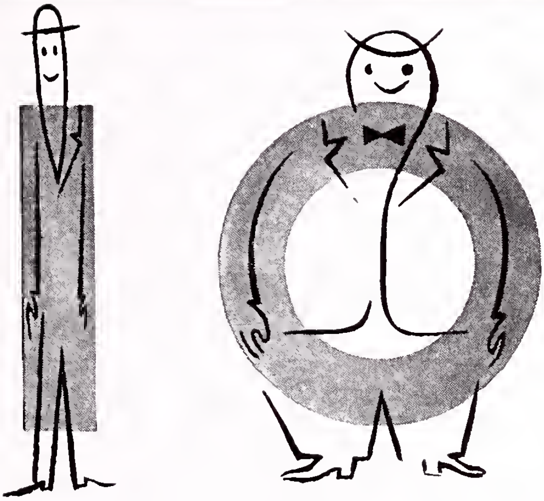

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[1] Handbook of Nutrition, Chicago A.M.A., 1943, p. 557.

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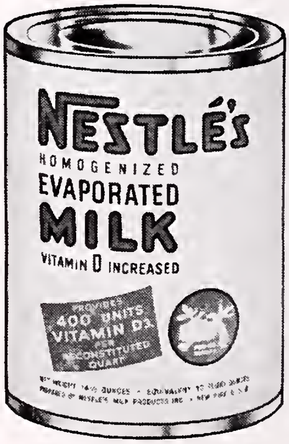

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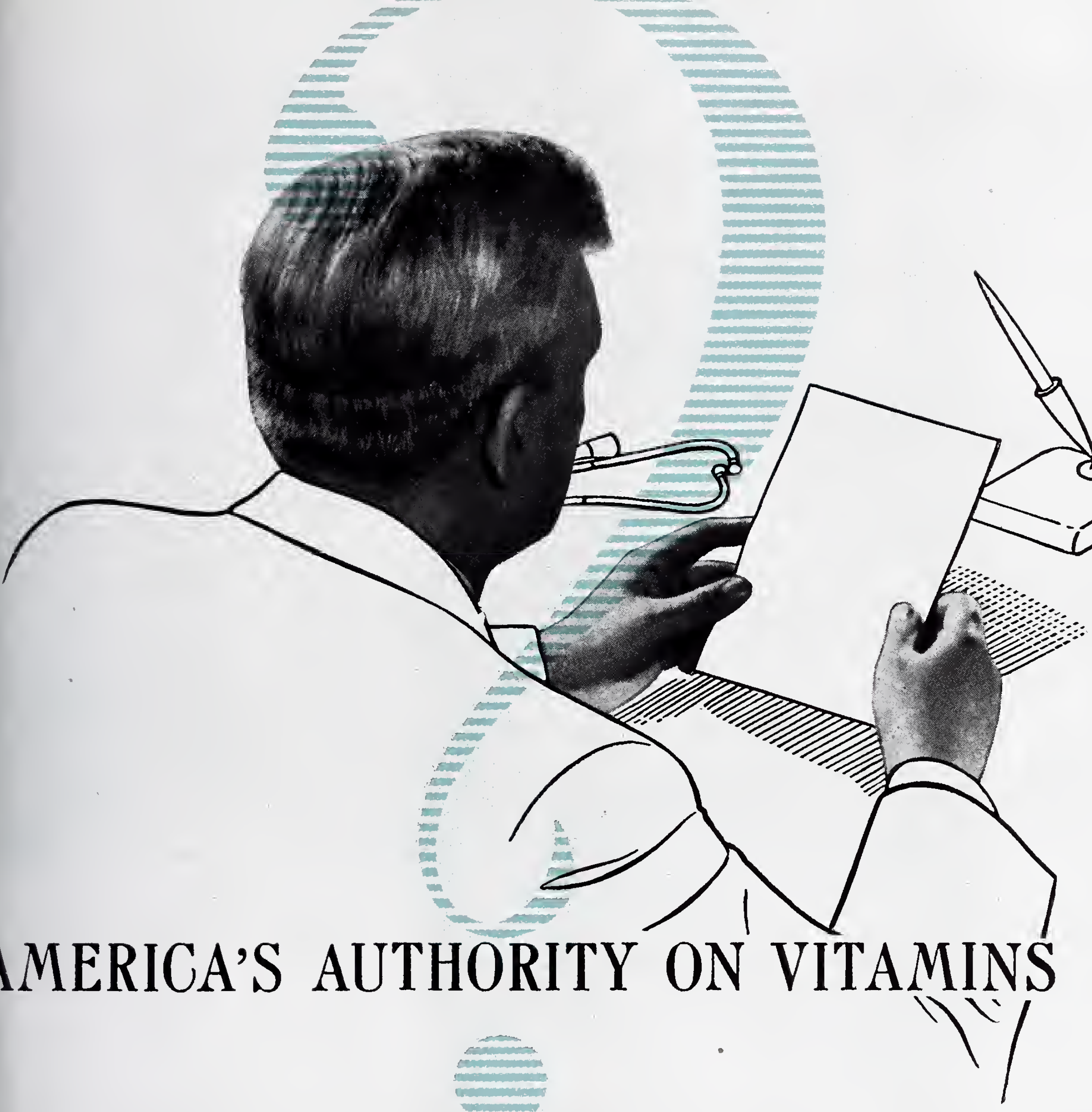

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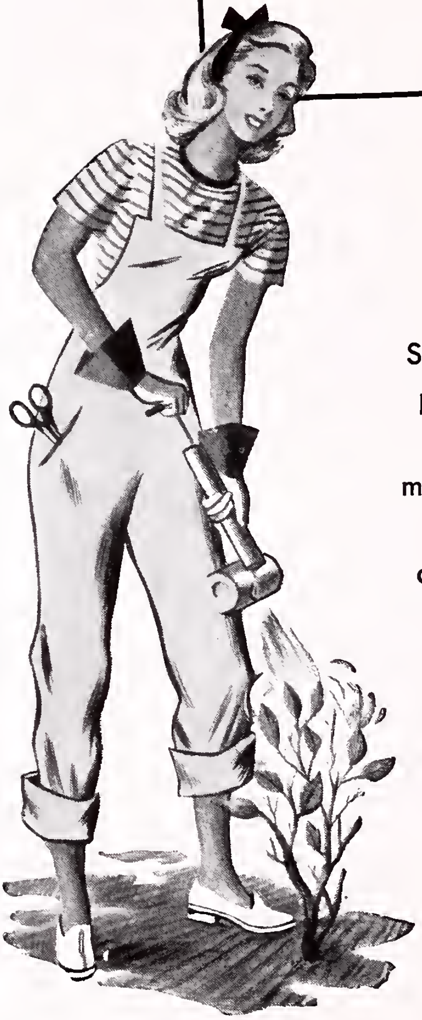

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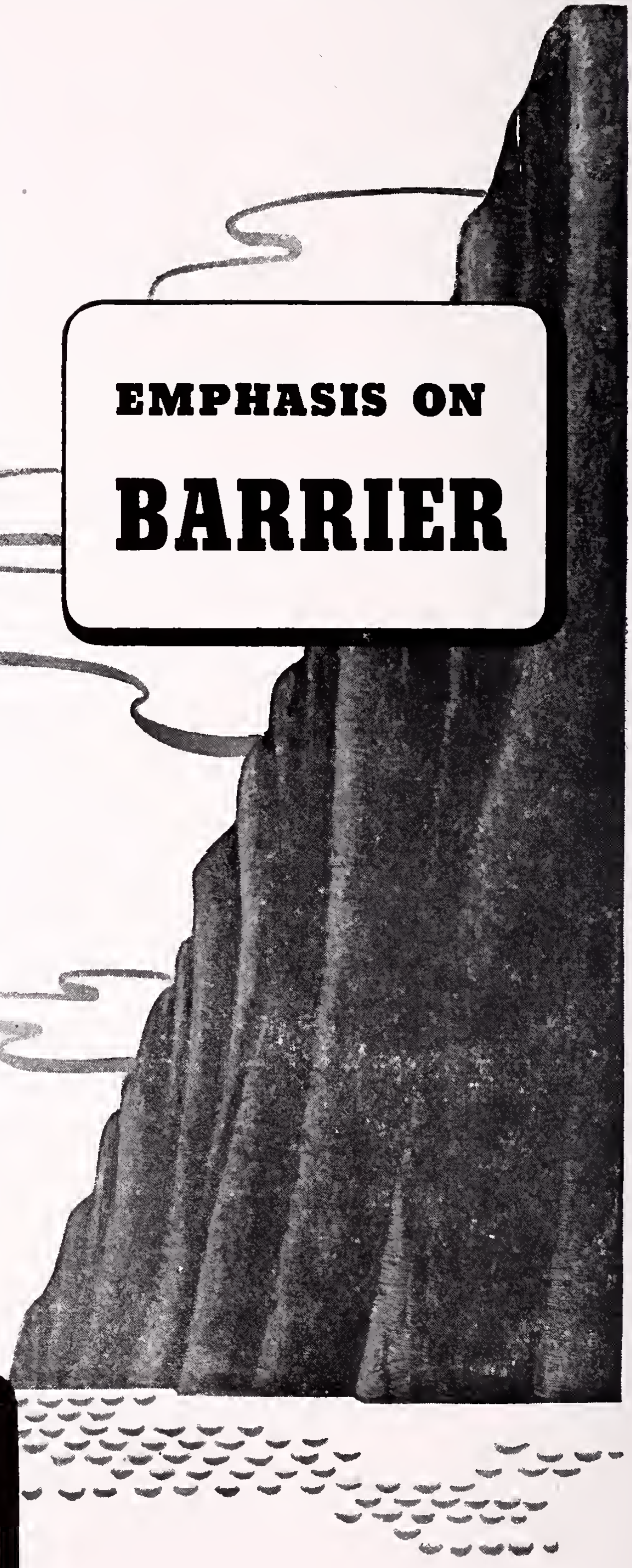

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1. Clinic Reports: Planned Parenthood Services in the United States. Human Fertility 10: 25 (Mar.) 1945.
2. Dickinson, R.L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
3. Warner, M.P.: J.A.M.A. 115: 279 (July 27) 1940.

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1. Freed, S. C., and Greenhill, J. P. (1941), J. Clin. Endocrinol., 1:983, December.

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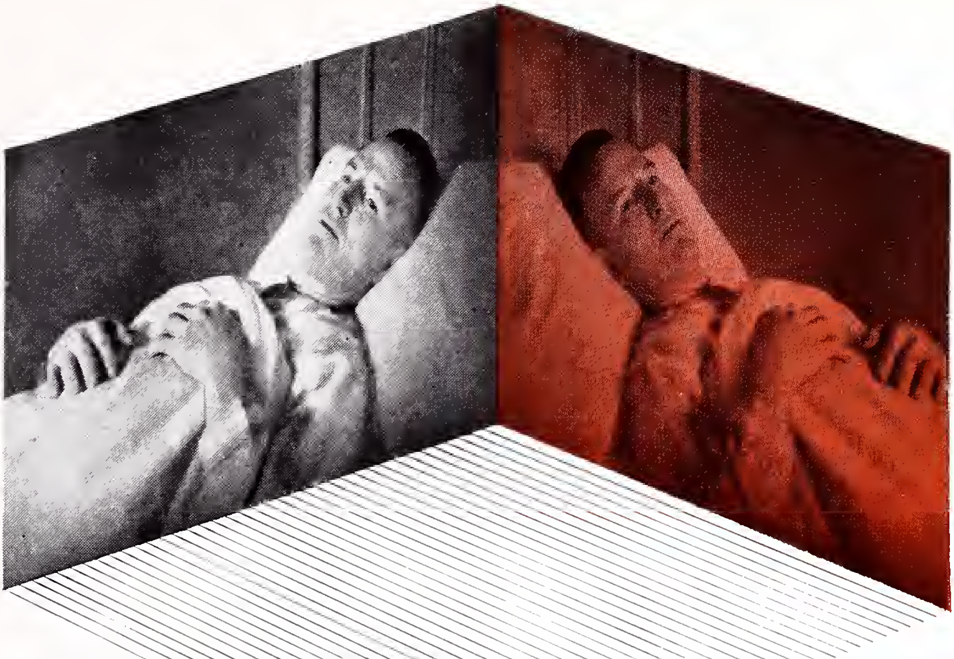

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The tempo of medical progress, always rapid, has been accelerated to a marked degree during the last few years. New discoveries and developments have been most revealing. In the practice of medicine, the old is never good enough if the new is better. Medical meetings are essential to better understanding, better health, and better medical care. The physician owes it to himself and to his patients to attend whenever possible.

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JUNE, 1946

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COMMENTS ON THE REPORT OF THE COMMITTEE ON PSYCHIATRIC STANDARDS AND POLICIES OF THE AMERICAN PSYCHIATRIC ASSOCIATION

M. A. Tarumianz, M. D.,*
Farnhurst, Del.

In the past one hundred years the American Psychiatric Association has assumed the great responsibility of creating policies and standards for the care and treatment of the mentally ill, as well as fostering research work for the prevention and treatment of mental diseases. The American Psychiatric Association has followed more or less a conservative approach for such achievement. However, in recent years the Association became cognizant of the fact that the attention of the entire nation was focused upon the need for adequate preventive and curative mental health services for all the people and that there was a definite demand for such hospital and out-patient services within the means of all classes of society.

The American Psychiatric Association recognized the fact that adequate psychiatric service has not been available to the mass of our population. It is very common not to find a psychiatrist within a radius of over one hundred miles. Most of the psychiatrists are located in large cities and in mental hospitals. Psychiatric service rendered by hospitals and clinics has never been on the same basis as the services of other branches of medicine in general hospitals. It was recognized by the Association that complete reorganization of hospital and out-patient services will be necessary. A uniform requisite for admission of patients to mental hospitals should be considered as vital. Outside of a few the majority of cases should be considered on a voluntary admission basis. Through education, such a procedure will become a rule rather than the exception. The Association felt that state hospitals for mentally ill should be so well planned that the public will accept them on the same basis as general hospitals. It is obvious that such services can be rendered to the people only through a competent staff. A true medical and psychiatric service can be rendered to the patients of our hospitals through competent personnel which cannot be obtained in any state without consideration of salaries of such a personnel. The Association became greatly concerned about the standards related to clinical activities. In the majority of our hospitals the most skillful psychiatrists are relegated to administrative responsibilities while the person to person treatment to our patients was delegated to the younger and less experienced staff members. The Association felt that it should be organized on such a basis that the service will radiate from its central headquarters to the whole of the United States as well as Canada and other countries of our hemisphere.

Mental Hospitals Should Lead the Way

Although marked strides have been made in hospitals for mental diseases in the last twenty years, the institutions have not reached the highest ideals and in the past four years have deteriorated considerably due to lack of personnel and equipment. Most of the hospitals in the country should be reorganized and restaffed.

The adequate recognition of psychiatry depends on standards created by mental hospitals and clinics, since all medical services emanate from the hospitals. Every recognized psychiatric hospital should be so well planned that the medical man and the public will accept them, thus public trust and confidence of the medical profession will be established. Such service can be rendered to the people only through a separation of the acutely and subacutely ill, as well as convalescent cases, from the chronic. Approach-ing this situation very realistically, it was felt that every hospital should assume the responsibility of excellent care and treatment of acutely ill by a competent staff of psychiatrists, well trained graduate male and female nurses and such other aides as are deemed necessary, thus giving the patients a great opportunity for recovery. *The cost for such care should be considered on the same basis as the cost of the physically acutely ill in an approved general hospital.* It is also deemed essential to *include* the cost for such services in the policies of the "*Blue Cross*" *and other hospital insurance plans.* The establishment of such a department in each mental hospital will institute a much greater bond with all general hospitals, medical schools and practicing physicians, thus stimulating a very desirable and badly needed understanding of mental health by the public. It is quite obvious that we are in an especially important era in regard to psychiatry. Never before has there been so much interest among medical men and lay people in psychiatry. Naturally the war and postwar conditions have stimulated this interest to a great extent and men are wanting instruction in psychiatry—men who would like to go into psychiatry, who have had general training in medicine. It is evident that this calls for a new reorganization in our concepts of psychiatric teaching and in the type of service that should be organized in the community. There should be a new integration of state mental hospitals with general hospitals and medical schools.

---

* Superintendent of Delaware State Hospital, State Psychiatrist, and Director of Mental Hygiene Clinic.

The Association advocates that there should be a psychiatrist on the staff of every general hospital of a certain size, to do consultation work, not only of the traditional psychiatric nature, but also to help with the psychoneuroses and psychosomatic medical cases, both on the surgical and on the medical wards. They should also be available for outpatient work, thus increasing the preventive work. There should be a new type of relationship between the general hospitals and state hospitals. The medical schools should supply men from their staffs to do teaching in state hospitals. This could be in the nature of seminars, discussions of case readings, bedside teaching and lectures. The senior men in the state hospitals should receive appointments on the teaching staffs of our medical schools.

The Association hopes also that some time before a degree in medicine was granted, each student would have had to serve some weeks on the staff of a state hospital doing practical clinical work.

The new standards for psychiatric hospitals and out-patient clinics prepared by the Committee on Psychiatric Standards and Policies were approved and adopted by the Association and published in the American Journal of Psychiatry, Vol. 102, No. 2, Sept. 1945. In the opinion of the Association the standards apply to large state hospitals and not to small institutions, particularly those connected with medical schools. It is obvious that these small teaching centers should be well-staffed and should carry on teaching and research work as well as have high standards of psychiatric care. One cannot expect these standards exercised literally in such teaching and other small hospitals.

STANDARDS FOR PSYCHIATRIC HOSPITALS

1. "All hospitals should have a small unit or department which will take the place of the present receiving ward, where patients upon admission will remain a brief period (usually not to exceed two weeks) to be classified and housed according to their condition. This unit will require the services of a psychiatrist for every 30 patients under observation; a graduate nurse for every 4 patients and a trained attendant for every 6 patients under observation.

2. "Approved hospitals should have a special unit or department for acutely mentally ill, where a patient will receive individual medical, psychiatric, nursing care and treatment, and individual services in the field of occupational, recreational and allied therapy. Intensive psychotherapy, in conjunction with physio-hydro-therapy, as well as modern organic therapy must be considered as indispensable in each case. The size of such a unit should accord with the admissions within a three to six months' period. This unit will have a small sub-unit for disturbed acutely ill individuals who will receive the same individual care and treatment.

"All cases in the unit for acutely ill should be housed either in single rooms or in small dormitories. Such a unit will require a psychiatrist for every 30 patients; a graduate nurse for every 4 patients; a trained attendant for every 6 patients; a physio-hydro-therapist, an occupational-therapist, and a recreational therapist for every 30 patients requiring such treatment, and any other service indicated.

3. "Hospitals should have a unit or department for a convalescing group where a patient will receive somewhat similar care, although not requiring as intensive treatment as in the unit for the acutely ill. The size of such a unit will be determined by the number of home convalescing patients during a period of six months. Such a unit will require a psychiatrist for every 50 patients; a graduate nurse for every 10 patients; a trained attendant for every 7 patients; an occupational therapist for every 30 patients; a recreational therapist for every 50 patients, and any other service indicated.

4. "Hospitals assuming responsibility for patients with a favorable prognosis but who require intensive prolonged treatment and care should have a unit or department for such patients. Such a re-educational service will require a psychiatrist for every 75 patients; a graduate nurse for every 25 patients; a trained attendant for every 8 patients; a physio-hydro-therapist, an occupational therapist and a recreational therapist for every 75 patients, and any other service indicated. This unit will have a special subunit for chronic disturbed patients.

5. "Hospitals receiving patients who require continued treatment should have a special unit or department. Such a unit will need a psychiatrist for every 200 patients; a graduate nurse for every 40 patients; a trained attendant for every 6 patients; a physio-hydro-therapist for every 200 patients; an occupational therapist for every 50 patients; a re-educational therapist for every 50 patients; a recreational therapist for every 100 patients, and any other service indicated.

6. "Hospitals receiving senile and arteriosclerotic patients, should have a special unit or department for such patients. Such service will require a psychiatrist for every 200 patients; a graduate nurse for every 50 patients; a trained attendant for every 8 patients; an occupational-recreational therapist for every 100 patients, and any other service indicated. This department will also include a special infirmary section with a graduate nurse in charge.

7. "Hospitals should have a special unit known as a medical and surgical department for patients who are actually physically ill, requiring either medical or surgical treatment. This unit will require well trained physicians, who have had adequate experience in general medicine and general surgery, with some psychiatric background. This unit should meet minimum standards of the American College of Surgeons.

8. "Mental hospitals receiving children under 16 years of age, will require a special unit or department known as the children's unit. Such a unit will require the service of a psychiatrist, who has had training and experience in a child guidance clinic, and preferably pediatrics, for every 30 children; a graduate nurse for every 10 children; a trained attendant for every 7 children; a teacher for every 20 children; an occupational-recreational therapist for every 30 children; a physio-hydro-therapist for every 30 children; and any other service indicated.

9. "If a mental hospital receives alcoholics and/or other drug addicts, it should have a special unit or department for their care and treatment. Such a unit will require a psychiatrist for every 25 patients; a graduate nurse and a trained attendant for every 8 patients; a physio-hydro-therapist for every 25 patients; an occupational therapist for every 50 patients; a recreational therapist for every 30 patients; and any other service indicated.

10. "Mental hospitals should have a special unit or department for tuberculous patients. Such a unit will require the services of a physician experienced in the field of tuberculosis for every 75 patients and a psychiatrist for every 100 patients; a graduate nurse for every 5 patients; a trained attendant for every 6 patients; an occupational therapist for every 25 patients, and any other service indicated.

"No institution can be considered a modern hospital unless it has adequate facilities for all types of physical examinations and tests required by the American College of Surgeons, including well organized clinical and pathological laboratories under competent direction; a roentgenological department; and a medical library under supervision of the clinical director.

"Every approved hospital should be under the management and direction of a superintendent, who should be a well qualified physician and experienced psychiatrist with administrative ability, whose appointment and removal should not be controlled by partisan politics. In hospitals with a population of more than 1,000 patients there should be an assistant superintendent, who should be an experienced and well qualified psychiatrist as well as a good administrator.

"Since adequate service can be rendered to the patients only through a competent staff, it should be imperative for every mental hospital to have a very well trained and experienced psychiatrist as clinical director, who will be the coordinator and stimulating head of the medical staff, and who will organize systematic instruction and rotation of service for the members of the staff. He should institute and supervise seminars for scientific discussions at frequent intervals. Staff meetings should be held at regular intervals, not less than once a week, under the direction of the clinical director.

"It is desirable that the superintendent or medical director, the assistant superintendent and the clinical director should be diplomates of the American Board of Psychiatry and Neurology.

"Salaries for the above positions should at least be comparable to those of specialists in other fields of medicine in the respective communities.

"Every member of the staff of each hospital should be encouraged to devote a certain number of hours per week to research or scientific study and investigation.

"It is desirable that every mental hospital have a well organized department of clinical psychology.

"All nursing, including attendants, in the mental hospitals must be placed under the director of nursing, who would be responsible to the individual authority of each service, to the clinical director and the superintendent of the hospital.

"It is desirable that the director of nurses should be a graduate of an approved school of nursing affiliated with a general hospital, who has the degree of Bachelor of Science of Nursing Education or its equivalent, and who has had a post-graduate course in psychiatric nursing in a recognized hospital. She should have had at least five years' experience including special training in administration.

"It is desirable that every mental hospital should have a training school for nurses wherever possible, as well as affiliate nursing courses.

"Mental hospitals should attempt to have a larger corps of well trained psychiatric nursing instructors. Many hospitals have been impeded and retarded in their educational programs for nurses and attendants by the scarcity of properly qualified instructors. It is suggested that every hospital should attempt to develop a post-graduate course for such instructors at the university level, wherever possible, and under the control of the universities using mental hospitals for practical training.

"Every approved hospital should have a minimum of one trained social worker for every 100 annual admissions, under the direction of a chief, who will so organize the department that there will be adequate pre-admission, admission and follow-up services.

"Psychiatric social workers should be graduates of an approved school of social work with at least 800 hours of supervised work experience in a psychiatric agency.

"The chief psychiatric social worker should have had three years' additional professional experience, at least two being in a psychiatric hospital and clinic.

"Every mental hospital should have the services of a well organized dental department, under the direction of a well qualified dentist.

"Every hospital should have the services of a well organized department of pharmacy.

"All non-medical administration duties should be rendered through a special service department, headed by the proper medical officer or business manager, under direction of the superintendent.

"The medical record system in a mental hospital should be under the supervision of a medical records librarian, fully qualified and if possible accredited by the American Association of Medical Record Librarians.

"Every hospital should have a regular library for the patients, under the direction of a librarian."

The Association feels that every well thinking administrator of psychiatric hospitals, as well as the vast majority of psychiatrists, will wholeheartedly support this approach of the American Psychiatric Association. However, this will not be sufficient to carry out the program for the ideal plan for psychiatric service. It will be necessary for the organized medical profession through its many channels, to induce the public as a whole to become cognizant of the importance of this program and to prepare their representatives to think seriously how to make this program a reality.

The American Psychiatric Association urges every state mental hospital to consider a minimum of five dollars per capita per diem necessary for the care and treatment of acute, sub-acute and convalescent cases and two dollars and fifty cents per capita per diem for the care of various types of chronic cases.

THE NERVOUS VETERAN,
A Preliminary Study of Causes*

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The problems of nervousness, emotional instability and maladjustment have been receiving increasing attention in both medical and lay literature. They were given impetus during the war, first, because of the large number of our young men rejected from military service for neuro-psychiatric reasons; and second, due to the large number of men discharged from the service or assigned to non-combatant duties by reason of their inability to adjust to the stresses of military life.

Many theories have been advanced and much has been written about the nervous soldier. As yet we have no satisfactory answer as to why one person can adjust where another fails. This problem is not only one of military interest but important to the whole country. Because of the number of beds occupied by mental patients, and the large number of persons unable to function efficiently in our social structure, it is vital that every effort be made to uncover and correct the cause of this economic disaster: mental illness.

This study is but a preliminary investigation on a relatively small number of cases, undertaken with the objective of finding some clues, some guide-posts, to lead us further in the knowledge of the origins of maladjustments and the neuroses. We have selected forty-five neuropsychiatric cases from the files of the Veterans' Traveling Convalescent Clinic for study; the criteria being, that each case has been studied both psychiatrically and psychologically so that there may be an objective approach to the problem.

Among the cases studied only three were colored. This ratio of race is disproportionate to the population figures of our state. The discrepancy can probably be explained by the fact that the colored people were less aware of the clinic services and significance. It is not necessarily an indication of the relative frequency of disability.

The youngest patient was nineteen and the oldest forty. Two were in their teens, 31 between the ages of twenty and twenty-nine and and the remaining 12 were in their thirties. This proportion coincides with the reported age ratios in military service allowing for the fact that one or more years have elapsed since these persons were inducted. Of those under thirty years of age, 65% were single and of the remainder one was divorced. In the age group above thirty, ¾ were or had been married and 1/3 of these were separated from their wives.

Separation from the home and a foreign environment have been offered as causes for many of the breakdowns in military service. In the group studied we find that 71% gave a history of nervous symptoms or maladjustment prior to entering the service and the majority of these served in this country only. In our series only 38% had been overseas and, of these 17 cases, 4 had had symptoms before entering the service, 11 developed symptoms in the service prior to leaving the country, and only 2 had typical combat reactions.

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One of these, #94 G. V. C., was a twenty-one-year-old white youth, whose father had drunk to excess and died in a state hospital, and whose parents had separated when G. was less than two years old. He was raised by his mother, and from his description was abnormally attached to her, "a mother's boy." G. is of average intelligence but only received six years of grade school education and has been employed as helper and truck-driver prior to entering the Service.

G. denies any nervous symptoms until after he had served with an armored unit in Europe. In 45 days of combat, during which he was strafed, bombed and shelled frequently, he became restless, jittery, lost his appetite and suffered disturbed sleep. He had a comparatively minor vehicle accident but now complains of many resultant somatic disabilities. In addition, he continues to suffer from battle dreams, rolling and tumbling in his sleep, startle reactions to loud noises, tremulousness, anorexia and inability to mingle with others. G. was considered to be an emotionally immature and dependent personality, suffering from combat reaction.

Among the cases studied, the diagnosis of psychoneurosis or one of its sub-groups was made in 58%. 22% were considered to be either inadequate personalities or simple adult maladjustments. The remainder included epilepsy, cerebro-spinal syphilis, and dementia praecox. These last named had been discharged from the service because of their illnesses. One veteran had been discharged because of nephritis. Two cases, or 5%, had received discharges without honor because of alcoholism and maladjustment. 26% of those studied had received medical discharges for other neuropsychiatric reasons. Analysis of the case histories of the last group reveals that more than half had definite symptoms prior to entering the service.

#87 N. G. W. was referred for nervousness and insomnia which he related to frequent attacks of malaria while in the service. This twenty-five-year-old white youth had been previously known to the Mental Hygiene Clinic when, at the age of fourteen, he was examined because of his troublesomeness in school where he was noisy and refused to obey or conform. N. is one of nine siblings whose mother related that ever since he had struck his right temple when he fell on the ice, at about the age of seven years, he had been a very nervous child. When interviewed N. related that after he left school he had had difficulty finding satisfactory work, as he was a "wood specialist" and most shops were so noisy that they "got on his nerves and made him jittery." Probably because of his difficulty in social adjustment, N. sought security in the Army prior to Pearl Harbor. As a regular Army man, stationed in the Pacific, N. was subjected to the original December 7th raid, as well as 180 bombing attacks, usually at night. He also served about 40 days on the Guadalcanal hills exposed to snipers and shell-fire before being evacuated for nervousness. He relates that he was not particularly scared until a close bomb hit killed 8 of his friends and, following this, he found himself crying and tremulous. He was diagnosed as combat reaction.

In breaking down the predominance of symptoms as presented by the patients at the time of their initial interview, we note that anxieties were most prevalent, being listed 14 times. Headaches of a conversion type, tenseness and tremulousness were next, followed by complaints of depression, disturbed sleep, irritability and anorexia. Somatic complaints, such as low back pain, nervous stomach and weakness, were next most frequent, in company with impulsiveness, quarrelsomeness and impaired concentration.

During military service we were impressed by the apparent relation between lack of education and nervousness or maladjustment. But in this study of a small group from a rather representative cross-section of our country, we note that only 6 cases had less than an eighth-grade education, while 56% had either graduated from grade school or had some high-school education, and 31% had graduated from high school or had one or more years of college. In this respect psychological testing revealed that 85% were of average intelligence, 5% borderline and 10% of superior intelligence.

Another factor which has been presented as causative in mental illness is that of the broken home. We found only 40% could be said to have come from unsatisfactory homes. Evaluation of this figure depends upon an understanding of the criteria used. We employ the term only when brief interrogation reveals that the patient was from a home which had been broken by the death of one or the other parent, a home disturbed by separation, divorce, drinking, or mental illness, or a home considered unsatisfactory because of marked over-indulgence, protection or rejection of the patient.

> #19 C. T. K., A typical example of an unsatisfactory home and its effect is shown in the case of C. whose father had been drinking to excess as long as C could remember and his parents separated when C. was twenty-three. Because of the father's alcoholism he never adequately supported his family and frequently embarrassed them by his behavior. The paternal grandparents had separated and 2 paternal uncles had been state hospital patients. It is reported that during C.'s childhood he had occasional night-terrors and nightmares but otherwise his development is described as normal and he had always been a "good boy." Throughout his life C. was backward and "does not take up with everybody," apparently shy and seclusive.
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> Shortly after enlistment in the service he had a rather severe inoculation reaction, following which he developed many somatic complaints, anxieties and loss of self-confidence, so that after discharge he was unable to return to his previous employment.

Analysis of the social adjustment, excluding neurotic traits, revealed no significant difference between those from unsatisfactory homes and those from apparently good environments; in fact, the incidence of alcoholic excess was twice as great among the latter.

From the experiences in World War I and those of our Allies before we entered the recent conflict, the military had concluded that morale was a very important factor in preventing mental breakdowns or maladjustments. Military morale can be analyzed either as a transient state of enthusiasm brought about by pep talks and propaganda; or it can be somewhat more permanent because of the prolonged training in understanding of causes and effects, unit pride and identification, with respect and admiration for leadership. Or, then again, morale may be based on more deepseated factors, such as social motivation, volition, will-power and the desire to be socially constructive.

In this study the factors of motivation and volition were analyzed as determined objectively in the psychological test pattern. It was found that 65% of the cases had appreciably diminished scores, indicating low volition and motivation, as compared to other scores. Of this group more than half had symptoms before entering the service. About 50% of those considered low in drive were diagnosed neurotic and 35% maladjusted or inadequate persons. Of the remainder, 2 were diagnosed as psychotic and another as epilepsy associated with chronic alcoholism in a badly maladjusted personality.

Since this psychological factor of low motivation seems to be so important, a comparison with the group having normal will-power is in order. Comparison of intellectual capacity in this small group was not contributory, as all those of borderline intelligence revealed good volitional qualities, whereas, all of low-average intelligence were low in motivation. Three-fourths of those with average scores and a little more than ½ of those of high-average intelligence revealed poor willpower. But only 1/5 of those in the group of superior intelligence had low willpower. Five had less than an eighth-grade education, 15 had graduated from grade school or had some high school training, and 8 had graduated from high school or had one or more years of college.

The home environment and possibly heredity, because the parents make or break the home, appear to be the most significant factors. Forty-seven percent of those revealing low volitional factors came from obviously unsatisfactory homes as compared to 29% of the other group. In each group 18% admitted to excessive indulgence in alcohol. Thirty-two percent of the first group admitted to poor work records, while none of the others did. Both groups were equal in the number of broken marriages.

In the large group which had revealed evidence of maladjustment prior to entering the service, about 70% had low volitional scores.

When considered as to diagnoses, we note that those whose psychological pattern indicates poor volition are about evenly divided between neuroses and maladjustments. Whereas, our figures show that where motivation scores were good, only one case was considered to be a maladjusted person, and he was of borderline intelligence, from a broken home, with a long history of delinquency.

#66 B. Z. A twenty-six-year-old male, of Polish descent, had been known to the Mental Hygiene Clinic thirteen years previously. At that time he was examined at the request of the Juvenile Court because of malicious mischief. We note that he is the youngest of 3 siblings. His parents had separated and the mother remarried only to separate again. B. was found to be of borderline intelligence, with an attitude of indifference about his offense and its significance. He was re-examined three years later by which time he had added four more offenses, including larceny, to his record. He related that he had attended school through the eighth grade, following which he had had many different jobs, changing either because of arguments with employer or because he just didn't like them. He stated that he had a defective toe amputated so that he could enlist in the service, but in spite of his apparent good intentions did not adjust well. He was frequently transferred to various units and readily admits having been AWOL ten times and courtmartialed three times. He was hospitalized in the Army for seven months for nervousness prior to receiving an honorable discharge.

B. complains that he worries about things, becomes easily irritated and says things that he does not mean. His examination revealed marked vasomotor instability and he was diagnosed as emotionally unstable, inadequate personality.

Continuing further with the pattern analysis, we observed impaired reasoning in only 13% of the cases and these were all characterized by severe anxiety. A typical introversion pattern was observed in 2, 1 of whom had been diagnosed at the Mental Hygiene Clinic as pre-schizoid prior to entering the service.

Summary

By reason of the large number of neuropsychiatric rejections and casualties in World War II, this problem is gaining prominence and attention and warrants an all-out effort to determine its cause and cure. This brief study attempts to provide through objective analysis a starting point for further research and reveals that age, race and educational level are not significant factors. Marital maladjustment was as expected, higher among the older age group.

Separation from the home environment was not in itself contributory, as a majority had revealed symptoms of maladjustment prior to entering service. Many did allege aggravation of old symptoms or the presence of new complaints which interfered with their adjustment and efficiency. Symptoms of anxiety and somatic conversion were the most frequently presented. The military services recognizes these disabilities and discharged 45% of our series for neuropsychiatric reasons, and permitted only about 1/3 overseas duties.

An objective analysis of the psychometric subtest patterns reveals that low volitional and motivation factors are present in a significant majority of those studied. Most of these had symptoms as evidence of maladjustment for many years and a disproportionate number were from unsatisfactory homes. There was no significant relationship between education, intellectual capacity and volitional traits. Psychiatric diagnoses were based upon clinical findings and we found that when motivational scores were satisfactory, the patients had been considered psychoneurotic; whereas 50% of those with low scores were diagnosed as maladjusted or inadequate personalities.

Conclusion

This preliminary study seems to indicate the need for further objective research into the relation of will-power and motivation to mental illness and social maladjustment. It indicates the necessity of reorganizing diagnostic concepts in accordance with total personality structure, and suggests that heredity or early environment is responsible for the outstanding personality defect—lack of volition.

PROBLEMS OF PSYCHIATRIC DIAGNOSIS

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While psychiatry has considerably advanced in scope and therapeutic effort, the psychiatrist continues to find himself in a somewhat awkward position in regard to his diagnostic problems. This is usually explained by the fact that his understanding of the personality problem runs far ahead of the standard classification in use, and that he is limited to pigeon-holing the case for statistical purposes. But it is certainly more than the standard classification that is responsible for the persistence of errors in diagnosis.

One cannot fail to note that erring is

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human, and that psychiatric diagnosis like any other human endeavor is beset with the frailties of all human effort. There are several reasons for diagnostic failures. The most elementary is the lack of congruity between the diagnostic label and the complexities of the biodynamics of mental deviations. This has been generally recognized as a serious drawback prone to detract the value of any formal diagnosis. Its defects become quite evident in borderline states which share essential characteristics of two or more groupings. Cases of schizophrenic reaction following malaria therapy of neurosyphilis, cases of general paresis with a schizophrenic pattern, and those not uncommon instances of affective-schizophrenic mixtures come to mind. But there is really not so much trouble with the attempt at classification as with the arbitrariness with which it is often made. There is always an easy way out of what seems to be a diagnostic impasse into the definiteness of simple group concepts on which all classification is based.

On close scrutiny the group concepts are rigid, but they cannot be too flexible because they are designed to be guide posts in a field where there are still too many unknown and unexplored areas. Rigid adherence to diagnostic labels has administrative advantages. One may not care to mix up the psychoneurotic reactions, the cyclothymic states and the involutional psychoses proper just because all are liable to occur at the menopausal phase. Yet many of the former conditions have unfortunately ended up under the heading of involutional psychosis. It is surprising, indeed, to find how little the organic or endocrinological factors amount to in such cases, especially when glandular therapy terminates in failure or when other methods are successful without the use of glandular therapy.

Naturally one cannot or should not allow therapeutic considerations to interfere with one's diagnostic concepts. From the viewpoint of therapy a psychopathic state may be intractable whereas a psychosis may be a therapeutic success. Likewise a precox case may respond excellently to electroshock treatment whereas a cyclothymic reaction may not. But one cannot state that a precox is not precox because so many, or so few, electroshock treatments have turned the tide of psychosis. Certainly such a stand cannot be taken as long as phenomenological criteria guide the diagnosis. Then, the evaluation of treatment success will not prejudice the diagnostician against thinking of a schizophrenic reaction as being favorable or benign as it most fortunately often turns out to be. Neither will it prejudice one against the diagnosis of dementia precox in general for considerations lying outside the patient's problems as for example considerations for his family, his friends, or his employer.

For the sake of scientific truth it will be wiser to keep psychiatric cases undiagnosed than to label them falsely. There should be no reasonable objection to any objective recording of facts, so there should be no reasonable objection to calling a spade a spade, or a precox a precox, whether favorable in outcome or not.

There are many labels toward which the psychiatrist may feel prejudiced for the sake of considerations outside the ken of facts. But it seems better from the viewpoint of policy to stick to the facts.

One may feel prejudiced against the diagnosis of psychopathy. In some places the diagnosis of psychopathic personality is shunned for reasons of avoiding social stigma, in others the same diagnosis is overworked to cover up ignorance of the multifarious aberrations of the mind.

Psychopathic states have their distinctive and universal characteristics the analysis of which should permit a balanced and objective diagnosis. Our methods of observation and examination will have to be improved by reference to a more highly differentiated trait classification with the aid of psychometric tests. Most current psychometric procedures are too short and unreliable to bring out the nuclear elements of the personality. Appropriate test interpretation lags far behind test administration, and such vague concepts as inadequacy, instability or maladjustment become diagnostic expedients.

Much more serious objections could be raised to the diagnosis of mental deficiency in many instances on objective grounds. The reason is that the mental deficiency group includes the most incongruous mixture of conditions which are still in need of etiological clarification. Furthermore, in the realm of subnormal intelligence, the stable and the unstable, the relatively well organized and the unorganized should be strictly separated. It is to be expected that under this label hide many instances of psychosis with no mental deficiency whatsoever. More accurate psychometric test methods are apt to eliminate the possibility of wrong classification in a group that appears especially vulnerable from the viewpoint of rash and superficial diagnosis followed by decisions of serious consequence such as relegation to an institution for the feeble-minded, neglect of etiological therapy, and worse yet, legalized sterilization procedure.

Much of the diagnostic difficulties arise from the lack of uniformity in the accepted diagnostic classification. Some terms are strictly etiological, others are strictly phenomenological. It is doubtless true that different individuals react to the same type of trauma, be it physical or mental, in a different manner. Thus, the reactions or the reactors appear more divergent than the etiologies. To whatever extent this fact may involve classification, a double or even multiple diagnosis will occasionally be inescapable. This would not constitute a setback as it becomes a more general custom to define the nature of the traumatic situation as dual or multiple from the standpoint of both cause and effect. The real trouble, however, begins at a point where the effect is known but not the cause, and where the etiological element is inadvertently or unknowingly misunderstood or misplaced.

While it still holds true that psychological mechanisms are credited with the development of abnormal mental patterns, their physiological correlates are barely known, and while the term "functional" is still adhered to for descriptive purposes, the somatic aspects are often pushed into the background with the result that subjective interpretation prevails over objective fact finding.

The progress of psychiatry will, of course, not alone depend on improved classification procedures, but on a more profound synthesis of data coming from the allied psychological field and from the biochemical and pathological laboratory. Psychiatry within its own sphere will have to set up non-overlapping criteria of comparison to promote multiple and differential therapeutic procedures wherever necessary.

EMOTIONAL VACUUM AND ALCOHOLISM

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The complex problem of alcoholism requires a very realistic attitude from the medical profession. A continuous re-evaluation of concepts is necessary, especially in view of the fact that alcoholism seems to increase far more rapidly than indicated by inconclusive statistics. The development of interpretative psychiatry has led to a current tendency to classify all alcoholics as "sick people" and to refer to alcoholism as a neurosis. This approach oversimplifies actual conditions at the expense of certain realities. A generalized presentation of the alcoholic according to which he is a conflict ridden individual who, unable to face or solve them, drinks in order to numb his troubled mind, would lead one to believe that an adequate therapeutic approach should be comparatively simple and effective. It has almost become a platitude to call the alcoholic an "escapist" who has to be induced to recognize his inner conflicts, gain insight and thus overcome his addiction.

Actualities, however, give very little reason for prognostic optimism and nothing would be more unjustified than satisfaction with the present therapeutic methods. It is of the greatest importance to have a realistic appreciation of therapeutic potentialities. Anyone who has sufficient experience with alcoholics knows that the majority of addicts relapse, regardless of the type of therapeutic management. Neither animal experiments, investigating the psychopharmocology of alcohol, nor dynamic interpretation of motives have been instrumental in improving the prognostic prospects.

It is evident that the diversity of personality types who become addicted to alcohol requires an individual approach rather than generalizing theories. It is nevertheless desirable to reduce the variety of etiological factors to groups with a common denominator.

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The existence of psychopathological factors seems to have been over-evaluated and it becomes increasingly clear that a very substantial number of alcoholics cannot be regarded as "sick." An analysis of personality components and a search for repressed or unconscious conflicts generally fails to reveal any evidence of a neurosis. An ever increasing number of alcoholics can be understood only through recognition of sociopathological factors of which one of the most important one's can be defined as an "emotional vacuum." These alcoholics drink because, bluntly speaking, there is nothing else to do to break the monotony of their lives. Their problem, for instance, begins at 5:00 p. m. when they leave their offices and are on their way home. They face a vacuum. Lack of cultural interests, a sterile home atmosphere, marriage relations which have grown stale lead these individuals to the next cocktail lounge or beer garden. A crowd composed of such individuals is still much larger on Saturday at noon when the weekend looms ahead as a prolonged period of boredom and emptiness. Many people from all walks of life become alcoholics because drinking places offered the only existing diversion. This is especially true in smaller cities which completely lack any trace of cultural activities and where movies seem to be the only source of enlightenment or entertainment.

It will be said, of course, that it is up to the individual and his capacity for experiences to evaluate life situations as dull or fascinating. While this fundamental truth cannot be contested, it must be added that monotony can be a reality and does not merely reflect an individual's lack of capability to interest himself. An emotional vacuum as a mass phenomenon is a sociopathological problem which points toward the existence of a cultural crisis. It simply means that a vast number of people completely lack a philosophy of living. The recognition of sociopathological aspects of alcoholism has certainly been neglected in the contemporary literature. The only social factor which is commonly discussed, is economic insecurity and its relationship to inebriety. The last few years of relative prosperity have produced a rapid increase of alcoholism—a fact which seems to minimize the importance of economic insecurity as an etiological factor. A primary cultural theory of an essential aspect of alcohol addiction is overdue for acceptance in psychiatric thinking.

Psychiatric analysis of any personality may reveal certain factors which may seem to be of potential psychopathological significance. In dealing with these factors, however, our outlook should be psychiatric, not psychiatristic. The mere existence of latent psychoneurotic trends is non-explanatory pertaining to the etiology of alcohol addiction.

Experiences during the war have re-emphasized the time honored knowledge of relations between general morale and mental stability. Reliable reports disclosed that the incidence of psychoneurotic reactions in the armed forces was smallest in groups with good leadership. Many psychiatrists seem to feel that considerations of interrelationship between general morale and the alcoholic individual is of little value as it does not contribute to the therapeutic problem which, after all, is confined to the individual. The alcoholic patient, however, must not merely be considered as an individual but also as a social person. The therapeutic management in its last and final stage cannot avoid the responsibility of reorienting the patient's outlook toward life. This is undoubtedly the most crucial, most difficult, most responsible and most neglected aspect of therapy. It is useless to focus attention exclusively on analysis of personality factors and the development of insight if the patient remains bored with life. Since the physician cannot assume the role of educator, minister or philosopher, his only approach to this problem is usually one of so called "substitutive treatment" consisting of suggesting hobbies and various occupations. Since it is fundamental to direct the patient at new emotional experiences, a recreational and educational therapy can be tremendously helpful. In the majority of cases, however, these measures are not sufficient to stimulate a new affection or reorientation of the inner attitude toward life.

The more fundamental solution to this problem lies in re-education. While the concept of re-education has become a familiar tool in psychiatric language, it is hardly more than a vague phrase and is not based on any real pedagogic principles. The chief goal of any educational effort should be the development of emotional maturity, self-discipline, personal and social responsibility. These qualities represent the stigmata of any cultural society. The designation of "lack of will power" as a causative factor of alcohol addiction has figured prominently in the literature on this subject. During recent years the discussion of this factor has been more or less abandoned either because it was felt that it is too vague and lacks psychological differentiation or because it smells suspiciously of moral judgment. These observations are undoubtedly based on sound reasoning. The fact remains that there exists a human attitude of lack of will power which manifests an absence of conviction, aim and purpose. An increase of this attitude in a society must be related to inadequate education. The great Hellenic teachers and philosophers knew this and directed education at the development of strong characters which they conceived to be the prerequisite for the functioning of democracy. If one compares their superior philosophy with the current ideas on so called "progressive education" one may be led to reorient one's concepts on mental hygiene. Modern pedagogy has been influenced by badly misunderstood psychiatric theories. Ever since the concepts on repression and inhibition made their way into the general literature, educators arrived at the fallacious conclusion that any kind of discipline would be harmful and should be banned as radically as possible. Not long ago a prominent member of the staff of a child's guidance clinic remarked in a speech to parents that discipline was not only psychologically harmful but also "undemocratic." Psychiatrists have neglected to explain that while repression and inhibition are under certain circumstances causative factors in psychopathology, they are also necessary fundamental elements in the human personality and are essential for the development of the cultured person. Social responsibility in a democracy depends on these virtues. Would it be heretical to say that the study of the Hellenic philosophy on education could contribute an immensely richer and sounder material to the subject of mental hygiene than a vast number of current articles and pamphlets? Francis J. Braceland in a recent speech on "Psychiatry and the Returning Veteran" emphasized "that psychiatry has its limitation and that its tenets are not applicable to all fields of knowledge." If it comes to education, or for that matter re-education, psychiatry must take its knowledge from the pedagogic sciences, whereas, in reverse, there is very little that psychiatry can contribute to the subject of education.

Will power as a psychological phenomenon cannot be separated from any kind of educational task. Psychiatry, in spite of the hopes of optimists, will never be able to cure the ills of society. Psychiatric treatment taking the form of re-education must be reinforced through contact with other intellectual forces. The establishment of interest, enthusiasm and affection can be achieved in the members of any group or society in which cultural activities, of whatever nature they may be, permeate the public atmosphere. Enthusiasm and the aroused sense of social responsibility can completely replace the emotional vacuum of the alcoholic. Abraham Myerson mentioned the case of a man whom he had to examine in a camp in World War I. This man was supposed to be a psychopathic drunkard and was recommended for discharge from the Army, but while the technicalities of discharging him were being unwound, his regiment moved to France and he became one of the greatest heroes of the American Expeditionary Force. Since re-education cannot be exclusively or successfully built on psychiatric concepts, one may seriously explore the possibilities for setting up re-educational clinics for alcoholics where, in addition to psychiatrists, representatives of various cultural forces would construct a program of systematic re-education.

If committees and organizations on Mental Hygiene want to approach the problem of alcohol addiction on a realistic basis, they have to impress society with the fact that the social element, or rather the sociopathological factor constitutes one of the basic causative forces. No longer should the average alcoholic be presented as someone who "runs away from something." It should be stressed instead that alcoholism is closely linked with social factors and that its geographical distribution, for instance, depends on cultural patterns. Psychiatrists and their various aides have to keep in mind that psychodynamic factors operate just as effectively in people of nations or cultures with a low incidence of alcoholism as in those among whom the number of addicts is excessively large and continues to increase.

In treating the alcoholic individual no psychiatrist should fail to study all aspects of his patient's life situation. The therapeutic management, at first clinical, later psychological, must in its final phase combat the emotional vacuum through reorientation of patients' attitude toward life. Only those who fully appreciate the difficulty of this task will have a realistic comprehension of therapeutic potentialities in the treatment of alcoholism as a mass phenomenon.

"PROLONGED ELECTROCONVULSIVE THERAPY"

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Electroshock therapy has become known to be the most harmless and the most widely accepted form of shock therapy in the psychiatric field. It combines comparative safety if applied to a carefully selected material, with easy applicability and a saving of time and energy to the supervising personnel. Its success has been firmly established in the treatment of certain types of acute psychosis such as cyclothymic and involutional depressions and some forms of dementia praecox. By contrast, it has failed to achieve significant results in certain types of neurosis, in the hebephrenic and simple type of schizophrenia, in paranoid condition, in the psychoses associated with mental deficiency and psychopathic states.

The handicaps imposed by the war situation due to lack of attendants and nurses and to the need for efficient short-cut methods in the handling of a type of patient considered refractory, chronic and custodial, inevitably led to the acceptance of the electro-convulsive treatment as a valuable aid in overcoming those difficulties which would formerly have called for extensive and prolonged application of such conservative methods as hydro-, narco- and psychotherapy alone or combined.

The symptomatic relief afforded by electroshock treatments was early recognized even in cases which ultimately did not react favorably. Noisy patients would, thus, become quiet, and destructive reactions subside under the impact of a short series of treatments although no definite hope for permanent change could be held out in view of the distinct evidence of previous treatment failures.

At first there existed a considerable reluctance to the forced repetition ad infinitum of the electroshock seizures as an agent of symptomatic relief. The possibility of damage from the electric current used in this type of treatment had to be seriously considered and still is a controversial issue. But in spite of the anticipation of some complication, there apparently has been no demonstrable evidence of any ill effect that would allow the justification of an alarmist attitude. That electroshock treatment can be pushed to an extreme without apparent harm, if skillfully handled, is testified to by the experience of other clinical observers. Although we are fully aware of the liability to severe criticism, such strenuous efforts seem at times to entail deserved rewards both for the patient and for the therapist, and, it is rather a matter of perseverance that perhaps in the end, brings quite unexpected results.

Each of the following cases is designed to show the merit of persistence in the application of shock treatment for definite objectives.

Case I

F. H. is a white female, 46 years of age. She was committed to the Delaware State Hospital in 1931 with catatonic symptoms. Her father was alcoholic and nervous, and one brother was addicted to alcohol. Patient attended business college and worked as a stenographer, bookkeeper and governess. She got married in

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1928. In 1929 she appeared to be worried, nervous and restless. She was hospitalized for a time in a sanitarium. When admitted to the State Hospital, she appeared negativistic, belligerent, disturbed and untidy. She would tear off her clothes and frequently walk around her room entirely nude. At other times she hid her face under a blanket especially when an employee entered the room. It was impossible to change her clothes because she would bite, kick and throw trays on the floor. She needed frequent tube feedings. She often had outbursts of catatonic excitement while alone in her room. She talked constantly in a very loud manner and in a deep, masculine voice, disturbing her neighbors Content of thought was jumbled, formless and obscene.

Patient received conservative treatment such as hydrotherapy and sedation, for five years without any improvement. In May, 1938, patient underwent insulin shock treatments. The result of these treatments was discussed by Morrow in 1938. At that time patient received 38 insulin treatments with twelve typical comas and 11 epileptiform seizures. For several months patient remained in an improved condition. However, she still displayed psychotic manifestations and remained very unstable. At first she took interest in her appearance, kept her clothing on and became tidy. She was quiet and cooperative enough to be taken outside daily for recreation. She never showed any insight into her condition. For instance, she would reluctantly accept the fact that she was in Delaware, and think that she had been married only two years. Soon she began to show a relapse. In the beginning she started to suspect that her jewelry had been stolen from her, and she accused the nurses of having her wedding ring. When her husband, who had been working in the west, visited her and told her he was going to move to the east, she was at first pleased over the prospect of seeing him more frequently but she could not understand the circumstances of the change. She frequently talked about not wanting to be a charity case. She became more and more irritable and had periods of depression. She refused food occasionally and started talking loudly in a delusional and excited manner. She would wander about the ward. No sooner had she lapsed into her psychotic state than it became very difficult to manage her. From time to time she disrobed herself, would not get out of bed and, as in the past, pulled the sheet over her head. In March, 1939, patient showed signs of untidiness and antagonism toward men.

Metrazol treatments were instituted on April 16, 1939, and, until July 28th, patient had 11 major convulsive reactions. After the 4th treatment patient showed some improvement. She became more sociable, started to eat in the dining room and helped with ward work. However, she still remained somewhat distant and paranoid toward the ward physician. During an interview she would be baffled as to why she was not allowed to go home, and why she could not have keys. She did not seem to grasp the fact that she was oblivious to many things that had occurred during her illness. Patient remained in a fairly good condition until August, 1939, when she again had a setback, and a second course of metrazol treatments was started. This treatment was continued until December 8th when she had her 23rd treatment. However, patient did not show any improvement, and in February, 1940, treatment was resumed. During the same year she had 12 treatments. Off and on she had psychotic episodes when she would talk out of the window, appear accusatory toward her roommates and require sedatives. Metrazol shock treatments were continued in 1941 and in 1942, and during that time she had 19 treatments. Altogether she had 65 metrazol treatments. It became impossible to continue the treatments because patient became frightened and resentful. Therefore, electroshock treatments were started November 18, 1942. This treatment was continued until May 9, 1946, and during this time patient had altogether 204 electroshock treatments. In addition she had two metrazol shock treatments in January, 1945. The treatment plan was clearly indicated by the episodic outbursts of disturbed behavior while during the quiet intervals the treatment practically came to a standstill.

Case II

H. H., a white female, was admitted to this hospital for the first time in January, 1935.

at the age of 44. She improved and was paroled in April, 1935. Second commitment occurred on March 7, 1940. Diagnosis was made of Manic-Depressive Psychosis. Patient is the oldest of eight siblings. She was graduated from parochial school at the age of 18 and, after attending a business college for 16 months, worked for a large company. It was known that she was always rather quiet, reserved, somewhat seclusive and retiring. She was industrious and always tried to assume responsibility for her family. She was a poor mixer and was attached to her mother. She was highly sensitive. Since the age of 21 patient worked with a large company, appeared well adjusted in her work, and was considered conscientious and capable. The first manic attack was precipitated by the illness of her mother who suffered a sudden stroke. At first she appeared worried, started to accuse her sister and brother of selfishness and complained of their desire that the mother should die. At the same time patient was convinced that her mother's death was imminent. Patient was overactive. After a time patient became rather indifferent toward her mother and turned optimistic about her mother's health. She would call up friends by phone and boast about the remarkable improvement in her mother's health. She even made some long distance calls. Soon patient began to express the thought that everyone should support himself. She wanted to return to work. She thought that everyone in the house was insane. She became gay and carefree. She made the statement that within two months she was going to be a doctor because she took a First Aid course in high school. Upon the advice of her sister and brother, she went on a trip to visit relatives; however, it did not help much and she became more irritable and impatient. Sleep became more difficult. She declared she had various clandestine love affairs. She changed her clothes frequently and used powder and rouge.

When patient entered the hospital, she was tense, tremulous and uncooperative. There was reduced motor activity. However, speech was overproductive, and occasionally she appeared incoherent. She showed a tendency to use silly stereotyped phrases and spoke of mysterious secrets which she promised to divulge later. She exhibited a self-satisfied attitude. A mood of mild elation was predominant. With pack treatments and sedatives she quieted down. She participated in occupational therapy classes. Following parole in 1935, she resumed her work and appeared normal in every respect. She made her home with her sister who assumed most of the responsibility for the other members of the family. She enjoyed going out and meeting people. In February, 1939, patient felt tired and was compelled to take a vacation in the country for two weeks, after which she appeared improved. In January, 1940, her sister changed her position and moved to another state. Immediately after her sister's departure patient had to assume the responsibility for the home. She became worried, apparently due to unemployment of a brother, and lapsed into a depression. She was quiet, showed psychomotor retardation, was weak and fatigued.

She was in a general hospital for several weeks and from there was transferred to the State Hospital. Patient was in a depressive state on admission, apathetic, indifferent, and incontinent. She had to be spoon-fed. Her responses were monosyllabic. She soon improved with benzedrine and continuous bath treatment, became alert, spontaneous and continent. She regained her self-confidence and participated in recreational activities, and corresponded with members of her family. In May, 1940, there was another manic attack. She became tense, restless, elated, loud, overactive and flighty. Pack treatments in the day time and sedatives at night were of no help, and patient gradually lapsed into a confused state, became hallucinated, irrelevant, noisy and incontinent. For some time she remained quiet but she never recovered from this manic attack. There was an exhibitionistic tendency. She thought that thousands of people were going to rape her. She lost considerable weight and in December, 1941, her weight was down to 80 pounds in spite of a forced feeding regime.

On December 3, 1941, shock treatments were instituted, and up until February 2, 1942, 12 electroshock treatments were given her. Then she became more cooperative although remaining untidy and mildly confused. She gained weight reaching 125 pounds. Frequent treatments had to be given as she continued to show signs of relapse. Only in May, 1942, appeared patient coherent and relevant and made a better adjustment; however, she never showed any real stability. From time to time she was markedly disturbed, restless, noisy, even profane and destructive. By the end of 1942 patient had received 60 electroshock treatments. She appeared physically well, but mentally unstable, with restless and noisy episodes. Until January 24, 1946, patient had a total of 143 electroshock treatments. She would talk freely about her family. Her calculation ability was satisfactory. In February, 1946, she revealed under sodium amytal that she had always been a "perfect lady," and the more she talked about this subject the more determined was her voice. However, she did not reveal any insight. She claimed that she came voluntarily to the hospital because she was tired and worn out. She did not remember any of her disturbed periods. She expressed willingness to go back to her old job. There were no delusions or hallucinations. She was self-satisfied and thought she was perfect in everything she did. Definite hypomanic tendencies were in evidence.

Case III

M. C., a white female, was first admitted to the State Hospital on June 2, 1927, at the age of 23. She was paroled in February, 1928. Patient graduated from parochial school and worked as a clerk since the age of 16. She was sociable, belonged to numerous clubs, was ambitious and bright. Her first attack occurred at the age of 17. At that time she was overactive, restless, and irrelevant in her talk. In 1922 she had a second attack which necessitated hospitalization for 6 months. Her diagnosis was Manic-Depresive Psychosis, Manic Type. For a while she believed that her food was poisoned, that she was doped, that she had no blood, and that she was going to be electrocuted. There was intense fear. The third attack occurred in 1927. She was in a rundown condition and lost weight, would not eat, and was subject to insomnia. She talked incessantly and became violent when opposed. She recovered with conservative treatment and was paroled in February, 1928. The opinion on the nature of her psychosis was divided, and dementia praecox was seriously considered.

In October, 1937, patient took a cruise to Cuba with her sister. During this trip she showed signs of excitement. She became overactive and remained this way during the entire journey. She drank considerably and started to talk irrelevantly. Upon her return home she went back to work but was so incapacitated that in November, 1937, hospitalization was again necessary. She remained in a hospital for a time and was transferred from there to the Delaware State Hospital in March, 1938. Here she remained in a mute state for a time and then would burst into loud, silly laughter, obscenities and irrelevant talk. She was irritable and destructive. No rapport could be established. Her facial expression was vacant. She was assaultive on numerous occasions. Hydrotherapy and sedatives did not bring about any improvement, and the impression of the attending physician was that patient was actually a case of schizophrenia.

In April, 1939, patient had a series of insulin shock treatments without any signs of improvement. She remained irrational, destructive and assaultive. At times patient appeared excited, overtalkative and destructive to clothing and furniture. There was a steady regression in behavior. Metrazol shock treatments were instituted. After the first 5 treatments patient showed some improvement. She took some interest in her appearance, even accepted her sister's visit in a friendly manner. On her own initiative she started to attend occupational therapy classes. Treatments were continued; however, after 17 treatments, patient became suddenly destructive and assaultive. At times she would talk to the physician in a friendly manner but frequently would jump out of bed and start to fight. She displayed various mannerisms, and expressed bizarre delusions. Metrazol treatments were stopped. Patient remained in an improved condition until September, 1939, when it was decided to resume metrazol injections. After more metrazol treatments patient quieted down again and became friendly and affectionate in a childish manner. She wandered around the ward and started to look at pictures in magazines without making an attempt at reading. She slept well. After having received a total of 24 shock treatments she unexpectedly showed a marked improvement. She talked freely about her past, asked for permission to go home on weekends, and was paroled in June, 1940. Until 1943 she remained in satisfactory condition, while she was treated for menopausal symptoms. When her mother died, she became a little unstable and depressed, and frequently came to this hospital for interviews. She kept her job.

However, her adjustment was superficial. In 1945 one of her sisters became ill and died. Patient soon became depressed and accusatory, calling her sisters indifferent and inconsiderate. She began to talk irrationally. She was readmitted on December 6, 1945, and after the 16th electroshock treatment she began to talk spontaneously and was more observant. After her 22nd treatment patient showed satisfactory emotional response and she was allowed to go home on weekends. She was again paroled January 26, 1946. On February 4, 1946, patient voluntarily returned to the hospital. She appeared excited, morose, resented shock treatments and displayed paranoid tendencies. She even threatened to kill physician if he resumed treatments. Until May 13th patient had a total of 55 shock treatments, effecting no permanent improvement. She has a habit of talking to herself and is occasionally loud but her general conduct is more agreeable. On February 10, 1945, she had a sodium amytal interview during which autistic elements were revealed. The impression was gained that she showed a schizophrenic reaction.

CASE IV

E. T., a 22-year-old white female, showed peculiarities in childhood. She would not go outdoors unless accompanied by someone because she was easily frightened by boys. At the age of 10 or 11 patient had night terrors and would remain in her mother's bedroom. At school patient was at first extremely shy and asocial. However, the shyness gradually diminished, and she made a fairly good adjustment. In 1941 she entered college. At the age of 14 she had difficulty in falling asleep and had the habit of keeping the window shades down and the doors closed. She became more irritable, tense, apprehensive, and impudent with members of her family. She admitted that she was subject to worrying and day-dreaming. After entering college she made a poor adjustment and complained that one of her teachers was making homosexual advances toward her. She was upset for a while but, after she was taken out for a short time to visit an uncle, she calmed down and returned to college. Off and on she would show signs of depression and talk about the college situation in a derogatory manner. Finally she became hallucinated in the auditory sphere, paranoid, confused and panicky.

She was admitted to a psychiatric hospital on October 20, 1943. There she was seclusive, stared blankly, laughed without reason, was uncommunicative and hallucinated in the auditory sphere. She expressed ideas of influence, and made the remark that she was bothered by a lot of "corny women psychologists." Diagnosis was made of Schizophrenia, Paranoid Type. Insulin shock treatments were instituted.* She had a total of 82 treatments with 72 periods of stupor. In addition she had 9 metrazol shock treatments during the course of insulin. No improvement was noted. Patient remained silly, at times sullen and hallucinated. She heard a man's voice who talked to her and made love to her. On April 9, 1945, she was admitted for further study and treatment. At that time she was uncooperative, untidy, showed a marked tendency toward blocking, displayed mannerisms and grimacing. On April 17, 1945, electroshock treatments were started. At first she had a tendency to resist considerably to these treatments but soon she appeared more cooperative. After 42 treatments patient volunteered some information about her past. She described pseudo-hallucinations of the auditory variety which she explained as projection of her own thoughts in the form of questions and answers. However, she was preoccupied with sexual delusions based on abnormal sensations. Until May 13, 1946, she had reached a total of 70 shock treatments. At present she appears much improved, however, without attaining full remission.

CASE V

A. B. was committed to this hospital on September, 10, 1953, at the age of 63. She is a high school and business college graduate. Normally she was reserved, oversensitive, easily hurt, and quick tempered. Her interests were limited to reading and church activities. She took great interest in her home. At the age of 46 she got married to a man 14 years her junior, whose low socio-economical standard and strong religious bend were a source of preoccupation and conflict. Patient was eager to have children. However, she declined to have an operation to make pregnancy possible. Immediately after her marriage, patient had short attacks of depression. In 1931 she lapsed into a depressed stupor which called for her admission to a mental hospital. She improved somewhat within 6 weeks. The symptoms displayed were not entirely characteristic of depression. She was overactive, negativistic and talked excitedly in a rambling and incoherent fashion, showed marked emotional swings, and was hallucinated in the visual sphere. She appeared confused. Within two weeks she quieted down and developed some insight. She did no longer express any self-accusatory ideas. Between 1934 and 1935 patient's condition necessitated hospitalization on three different occasions. In 1942 patient was again hospitalized in a sanitarium on account of depression. She remained there for 7 weeks but upon her return home she lapsed again into a depressed and agitated state. She was assaultive toward her husband, and threatened him with a knife.

Her treatment consisted of convulsive therapy, but was followed only by temporary improvement. She was later transferred to our hospital in an extremely agitated state. She had frequent crying spells, was preoccupied with ideas of death and suicide. She gave very little information about herself. At times she was incoherent in her responses. She soon became assaultive. On frequent occasions she kicked employees, or threw dishes in the dining room. Pack treatments were of little help, and on Sept. 17, 1943, electroshock treatments were instituted. After the 5th treatment she became more cooperative. Her appetite was good. She appeared more cheerful and talked fairly coherently. She participated in occupational therapy classwork. However, she still expressed the thought that nobody loved her, and that her husband was much older than she. After the 12th treatment she became confused, and treatments had to be temporarily discontinued. This confusion subsided within two weeks. Thereafter she became coherent and relevant, talked fluently but wrote distorted letters home. It was evident that she had not entirely recovered. Patient again became despondent, agitated and uncooperative. From Sept. 17th until Dec. 29th, 1943, she had 22 shock treatments. In January, 1944, treatments were resumed, and up to Feb. 16th she had a total of 33 treatments. In February, 1944, metrazol shock treatments were started and during the year patient had 37 such treatments. In addition she had, in 1945, 88 electroshock treatments. From Oct. 12, 1944 to Nov. 3, 1945, she had a total of 158 shock treatments (metrazol plus electroshock). This patient is calmer and quieter, cooperative, is sleeping and eating well and has gained weight. She shows some impairment of memory. Her age level and the possibility of organic complications seem to preclude a more favorable outcome.

Conclusion

The application of prolonged electroconvulsive therapy to the just described and numerous other chronic patients was dictated as an emergency measure under difficult circumstances, yet there are many reasons why this method is going to stay. The risk of regression is too serious in many instances of chronic psychosis to stand by idle or to rely on conservative regimes which, more often than not, give little satisfaction to the patient and no encouragement to the physician. There are still too many unknown factors about the basic principles involved in this method, and it is sincerely felt that it is still in the stage in which the experimental attitude of the therapist is an asset. Moore, and Kalinowski and Hoch have described as maintenance treatment a method of application designed to keep the optimal level of improvement in cases which do not enter into permanent remission.

We believe that electroshock therapy can and should be expanded to such chronic cases in which a tendency to intermittent or periodic exacerbations exists. There is ample justification in such procedure, and the following points deserve serious consideration:

(1) Resistance to therapy of one or the

other form has been established on previous experience, or

(2) at times, the patient is admitted for further treatment after several previous therapeutic endeavors in the acute phase have failed.

(3) Physical impairment due to unfavorable attitudes of the patients can be forestalled (poor food intake, refusal to eat, need for tube-feedings, or parenteral fluid administration).

(4) Sedative therapy cannot be pushed beyond the critical level, and overdosage can be easily avoided.

(5) Violent outbursts can be more readily held in abeyance while the actual risks to life and property are reduced to a minimum.

(6) Mechanical restraints can be limited or entirely abandoned.

(7) There is still the potential element of unexpected gains.

(8) In our experience, no evidence of permanent impairment of mental faculties as a result of prolonged treatment has been adduced, and there was not a single serious accident among the large group of chronic patients thus treated.

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VERBAL POLARITY IN DEMENTIA PRECOX

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It is becoming increasingly evident that objective psychometric methods are of great value in the psychiatric analysis of mental disease and personality abnormalities. Exact laboratory techniques not only confirm clinical impressions but increase the possibilities of fine intra-individual differentiation impossible to attain with traditional clinical observation. Karl Menninger points out in his introduction to Rapaport's book that "with the advent of the newer methods in psychological testing, psychiatry has come of age in the scientific world" and "that the psychological laboratory has become indispensible to the clinical psychiatrist." He goes on to say: "In those early groping days of psychometry when psychological testing meant only the more specific measurement and description of intelligence, it was understandable that psychiatrists found it of minor value, useful only in cases of borderline mental deficiency. But that was a long time ago, as time is measured today. Psychological testing has come a long ways since then. It has come further than many psychiatrists realize.

It is the department of mental science in which the greatest relative progress has been made in recent years." "The matter of results justifies a few additional words. I think many psychiatrists give only lip service to the importance of the psychological laboratory and of psychological testing because they are not wholly convinced of the validity of the newer psychological test indications. . . . but our experience here has shown time after time that the psychological test results point to more (or less) malignant condition than clinical observation had led us to suspect and further observation has usually proved the psychological tests correct." "I cannot express my own endorsement of this book more strongly than to say that I believe that the practice of psychiatry without the assistance of modern psychological testing . . . is as old-fashioned and out of date as would be the practice of orthopedics without the X-ray." Menninger's enthusiasm about psychological tests is shared by the present writers, but not without certain reservations. When he speaks of the newer methods of psychometric analysis, he has in mind the inter-individual and intra-individual interpretation of test results. In the old days the results from many different tests were added and averaged to yield one I. Q. The more recent approach to test interpretation is to regard test results as the outcome of the total personality of the patient.

For example, when an individual obtains a vocabulary quotient of 120 and an arithmetic quotient of 65, the two values are not averaged but their relationship carefully investigated and its meaning in regard to the patient's problems fully explained. The modern practice consists of studying many such relationships derived from a large number of heterogeneous test scales. The central question is not to find out whether the patient is dull or smart but to determine what personality factors cause these striking and scientifically useful discrepancies in adjustment found almost daily in abnormal individuals. Averages obscure precisely what the clinician is looking for. On the contrary, analysis of the spread and distribution of many test quotients reveals the nature and degree of mental dysfunctioning. Such studies increase the diagnostic accuracy beyond anything known to psychiatry in past decades. They also make psychometry the science of the individual in all his complexity. Each person is a law unto himself and each psychometric pattern is as distinctive and meaningful as is the behavior pattern under investigation. No two persons are alike when viewed in terms of their test constellations. The complete individuation of test results does not excuse the psychologist from organizing his thinking into practicable and diagnostically useful concepts of the human mind. It is impossible to comprehend the numerous variations and permutations of objective test findings without a theory of the whole personality.

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The weakness of most studies in psychometric pattern analysis lies in the fact that they fail to provide an acceptable theory of human intelligence and character. They are too opportunistic and still too intuitive. A further difficulty in the accurate analysis of test patterns is the choice of the validating criterion. Babcock, Rapaport, Wechsler and numerous other experimenters have used psychiatric classifications of mental illness as the starting point for their psychometric researches and as a comparative norm for their findings. The value of their conclusions is thus marred by the limitations of current psychiatric ideas and nomenclatures. Few psychiatrists believe that their groupings of mental ills have a sound basis in scientific observation. Psychometry as a science cannot possibly advance by reference to systems of thought which are less scientific than itself. Like astronomy, physics and chemistry, psychometry must develop its own intrinsic criteria of comparison which will be applicable to all humans, sick and well. It must and can influence psychiatric thinking in such a way as to modify and eliminate useless and impracticable concepts of mental disease. Otherwise it merely perpetuates that which is inaccurate, unscientific and untenable in psychiatry. It can be most helpful to psychiatric progress only when it develops a comprehensive theory of the total personality by the observance of factual interrelationships extracted from its well-controlled experimental designs. Psychiatric systems of mental classifications will become outmoded only after psychologists improve their psychometric systems far beyond the stage of present-day pattern analysis.

In current investigations the emphasis has shifted from the determination of intelligence to the analysis of mental illness. What is really needed is the exact determination of all mental factors influencing human behavior, including intelligence, sanity, temperament, volition, and all the other personality traits known to exist. When the accurate measurement of the important mental factors is accomplished, psychometry will become truly indispensible to psychiatry. Classifications of mental illness will then be expressed in terms of multiple but readily understandable indices and not in terms of vague descriptive categories. Mathematical expression of several primary facets of the personality will take care of the common overlapping found between the various groups and classes of mental illness as conceived nowadays.

It has been known for almost forty years that in mental illness the vocabulary test is less vulnerable than are most of the other tests employed in clinical practice. Babcock has demonstrated some years ago that patients suffering from general paresis and from dementia precox have usually higher vocabulary ratings than memory ratings or manual performance ratings. Jastak has shown that the same relationship prevails in children with behavior disorders. It is a common observation that practically all verbal tests are less affected by the aberrations of mental disease than are tests which require the learning of new impressions and the planning of manually executed performances. This phenomenon has led to the practice of considering the vocabulary test a valid tool for the measurement of the pre-psychotic intelligence level of the patient. It has also been used for the estimation of the degree of mental disorganization. Thus, if two patients have vocabulary quotients of 100, they are usually diagnosed as being of average intelligence regardless of the value of other test ratings. If the performance quotient of one patient is 76 and of the other 63, the latter is considered more disorganized than the former. In many cases it is entirely legitimate to assume that the greater the difference is between the vocabulary rating and some sort of efficiency rating the more severe is the mental disturbance. But this is not always so. The verbal concept-efficiency theory is based on at least three unverified assumptions. If the assumptions are correct, the theory and the clinical practices based on it are valid. If the assumptions are incorrect, the clinical interpretations it favors must be abandoned in favor of more universally acceptable procedures.

The assumptions underlying the Babcock theory are as follows: (1) The vocabulary test is not appreciably influenced by the disturbances of psychotics or if it is, the effect is a uniform or constant one in all cases. (2) The vocabulary test is a valid technique for the measurement of intelligence. (3) Memory tests, manual performances and other vulnerable tests are predominantly tests of mental efficiency rather than intellectual capacity. Clinical experience and precise measurements seem to indicate that each one of these assumptions is correct only in a small minority of cases and that therefore the Babcock method may not be used reliably for the study of either intelligence or sanity. The vocabulary test is often strongly affected by mental disturbances. The vocabulary test correlates with intelligence only imperfectly. In this it resembles all other tests including the so-called efficiency tests. The so-called efficiency tests are frequently better tests of original intellectual capacity than is the vocabulary. The identification of the extent of one's word knowledge with intellectual endowment is popular for two reasons. The vocabulary test yields one of the most reliable and most consistent psychometric measures.

The vocabulary and similar verbal tests have the dubious distinction of measuring what is known as abstract intelligence. It is a fact that a highly reliable test is also a valid test. What remains to be done is, of course, the establishment of the nature of its validity. How valid is the vocabulary, or any other test for that matter, in the determination of intelligence? How valid is the vocabulary test in the study of temperament? How valid is the vocabulary test in the estimation of emotional stability? How valid is the vocabulary test in the analysis of human motivation? How valid is the vocabulary test in assays of schooling and education? How valid is it in the measurement of mental deterioration? How valid is it in estimates of specific verbal ability or neural polarity of the individual? If we assume for one moment that the vocabulary test is affected by all these variables, then it cannot be legitimately employed as a reference point for the calculation of efficiency indices or deviation ratios to investigate the personality organization of the patient.

Even if we admit that the vocabulary test is a very reliable and valid psychometric tool, we need not imply that its validity is limited to any one of the above-mentioned factors. Verbal tests are no better tests of abstract intelligence than are form board tests, drawing tests, picture tests, memory and attention tests. Intellect, sanity, temperament and will power have varying media of expression in different individuals. Mental disorganization is sometimes measured best by one test and sometimes by a totally different test. Intelligence is best determined by the use of different ratings in different persons. The mental capacity of human beings is expressed through many different channels. Sometimes the vocabulary test expresses it most adequately, sometimes arithmetic, sometimes verbal comprehension and reasoning, sometimes manual activity and sometimes social adjustments. Each individual has his own distinctive medium of expression. The distribution of the most favored media of expression is random. Therefore every test is as good as every other test in measuring the native endowment of people.

The inadequacy of the verbal concept-efficiency idea has led some psychologists to search for new methods of expressing and interpreting the inter-test discrepancies of psychometric examinations. Wechsler, for example, suggests the use of the mean of all test scores as the reference point from which the numerous test deviations may be calculated. The mean of many test ratings or quotients is an extraordinarily stable statistic. Its great mathematical reliability lends itself to the extraction of numerous deviation constants. Unfortunately these constants along with the means from which they are calculated are devoid of psychological meaning. The mean of many psychological ratings is a thoroughly heterogeneous value. It conceals within itself a multiplicity of undifferentiated effects. It is contaminated with all the variables that are to be isolated and measured in sensible and workable diagnosis.

Here is a practical example of the impracticability of the mean-deviation method. A patient receives the following twelve quotients from twelve different, reliable scales: 96-72-68-67-67-65-64-64-64-63-62-58. The patient is obviously psychotic and severely disorganized. The mean of all his tests is 67.5. The deviation ratio obtained by dividing the lowest score by the mean, to take only one instance, is 86. If applied to the general run of psychotic cases this value of 86 is quite high, indicating a perfectly normal personality. In reality the patient is more disturbed than most psychotics. Cases of this sort are so common in ordinary clinical practice that the mean-deviation ratio or mean-test difference is of little value in aiding the psychiatrist in clarifying his ideas about the capacity or the mental condition of the patient. The first and foremost condition of a valid pattern analysis lies in the postulation of clear-cut, easily identifiable psychological traits. Purely statistical devices, no matter how reliable, will not do. If averages are used they must have a psychological rationale which insures homogeneity of the resulting score.

If the tests in a battery of twelve scales are reliable, their scores are equivalent in their psychological significance. The range of scores, from the highest to the lowest, is in fact more important than is the average of all tests. The highest rating, regardless of the test, is no less important than is the lowest rating. It represents the least vulnerable item in any one individual. Any test whatever may assume the position of the least sensitive item as far as the psychosis or the abnormality is concerned. Vocabulary, reading, arithmetic, recall, picture reasoning, form boards will in different persons take the first position in comparison with the achievements of a random sampling of the population. This highest rating or perhaps the average of the highest three ratings, if statistical reliability is wanted, will be closer to the potential capacity of the individual than all the remaining ratings. It reflects the person's level of highest mental integration which is the most accurate operational definition of intellectual endowment. It also serves as the most valuable intrinsic criterion from which all characterological or non-intellectual deviation ratios may be computed. The deviations from capacity fall into several congruous test clusters corresponding to several independent personality traits. Thus the measurement of several primary character traits becomes a distinct possibility. The definitions and methods of clinical measurements of these traits will be described in detail in a forthcoming volume by one of the writers.

In this paper we are concerned with one of the non-intellectual factors which we call the polarity of the human mind. It controlls the laterality orientation of the patient and with it the language aptitudes observable in people generally. This verbal polarity is found to be uncorrelated with intellectual capacity. This means simply that intellectually average or even superior persons may be deficient in vocabulary and in all the verbal functions measured by related verbal tests. Conversely, some intellectually inferior individuals may be relatively more adequate in the language functions than are intellectually average or superior individuals.

We shall confine ourselves only to the measurement of native endowment and of neural polarity, though other personality traits may be readily measured by the method here proposed. The tool used for this purpose is an experimental scale of twelve sub-tests developed during fifteen years of experimentation in the psychological laboratory. The battery is called the "Psychometric Patterns." It includes vocabulary, oral reading, information, analogies, comprehension, digit recall, mental arithmetic, picture anomalies, picture reasoning, symbol substitution, drawing and form boards. These tests have been found to be far more reliable due to improved administration and scoring than most psychometric scales in current use. Our demonstration will be on forty cases of dementia precox. Any other group of psychiatric cases could have been used with equally good results. It can also be used on normal samplings of the population.

The capacity scores of the forty cases of dementia precox are calculated by averaging the three highest quotients regardless of the nature of the tests falling in these positions. When this is done in a random sampling of normal persons the correlations between capacity scores and tests range from .42 to .58 with an average correlations coefficient of about .50. Thus intelligence or the maximum level of mental integration accounts for only about 25% of the total variance of human achievement. Our capacity factor is closely related to the general factor of Spearman isolated over forty years ago and also to Thurstone's general (first unrotated) factor which is invariably present in all multiple factor analyses. The average capacity score of our group of 40 dementia precox cases selected at random is 99.6. The range of capacity scores varies from 64 to 136. There are no significant differences in capacity between the various sub-groups of dementia precox. Whether they are paranoid, catatonic, hebephrenic, simple, mixed or undetermined, their capacities tend to be average with a suggestion of normal variability of scores below and above the average. This is as it should be, because the condition of dementia precox occurs at all levels of capacity. The native endowment of those suffering from dementia precox is independent of the manifestations of their insanity. Insanity has no effect whatever on the intellectual capacity of men. It does affect certain achievements, abilities and adjustments, but it does not lower intellectual altitude as is commonly believed. The observed disorganization is not intellectual. but characterological. Character traits are in turn independent of capacity. They may occur in various amounts and combinations in the genius as well as in the imbecile.

Verbal polarity is revealed by the deviation clusters from capacity of five tests of the psychometric patterns. These are vocabulary, reading, information, analogies, and comprehension. The deviation ratios are calculated as follows. The standard scores (M 100, S. D. 16) of the five tests are found. Suppose these are 82-91-93-97-105. Only the median three scores, in this case 91-93-97, are averaged. The average is 93.67. This value is divided by 107, the capacity rating of the patient. The resulting quotient is 87.54 which, if transmuted into a standard score, is exactly 100. The verbal polarity of this patient is therefore average. If we had used the vocabulary rating of 82 as the patient's intelligence quotient, we would have underestimated his capacity by fully 25 points. This is what actually happens in many cases in which the Babcock system of test analysis is employed. It should be pointed out that the polarity score is derived from a different cluster of tests in each patient. This principle of factorial diversification is one of the most important discoveries of clinical psychology. It applies to the measurement of capacity as well as to the objective isolation of all other personality traits. Verbal aptitude and language development are largely independent of native capacity. The bright infant may be late and defective in articulate speech. The moron may be as good in his language abilities as his capacity permits. Reading and spelling disabilities occur at all levels of intelligence. Orton's developmental motor apraxia is randomly distributed at all intelligence levels. The correlation between our polarity scores and capacity scores is within the probable error range of zero in a random sampling of any age group. The average polarity rating of the whole group of dementia precox patients is 99.1. All subgroups of dementia precox tend to have average polarity ratings, 95-102. The average polarity ratings of the various capacity levels in our group are similar.

Capacity Level	Average Polarity	Number of Cases
120 - 140	104	7
100 - 119	98	12
80 - 99	99	17
60 - 79	102	4

This is another way of stating that verbal polarity may be high in cases of low capacity and unfavorable in cases of high capacity.

Superior intellect may be associated with inferior or superior verbal ability. In most cases it is average. Most cases of average intelligence have also average polarity scores. The distribution of capacity and polarity quotients approximates normal variability in the general population. In our demonstration group the incidence of both ratings is as given below.

Standard Scores	Capacity N	Polarity N
Below 70	2	3
70 - 79	2	2
80 - 89	8	7
90 - 109	17	15
110 - 119	4	9
120 - 129	4	3
130 - 139	3	1

Verbal polarity as herein defined and measured is an independent and primary mental trait of the non-intellectual variety. It depends on neural organization and not on the brain power of the individual. The ability to express oneself in language is no more intellectual than is the ability to comprehend and to employ spatial abstractions. Block constructions are as good a test of intelligence as is the vocabulary test. Many persons are inferior and deficient in vocabulary from early infancy on despite good mental capacity. The vocabulary test, invulnerable though it is in the examination of psychotics, may not be used as a valid reference point for the derivation of factorial scores or of clinically meaningful personality scores. Deviations from the mean yield psychologically impure test patterns which are of little or no value in the experimental study of mental disease. A random sampling of psychotic individuals of all classifications are of average intelligence. This experimental finding is in harmony with common sense observation. Sanity and intelligence are independent psychological entities. Their incidence is random in the general population. One has no effect on the other, but both determine success and achievement in life situations as in tests. Sanity is not a homogeneous mental trait, but may be analyzed into various components by appropriate psychometric methods.

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OPPOSES MERGER OF VOLUNTARY HEALTH AGENCIES

In a statement strongly opposing recent attempts to merge the nation's 20,000 voluntary health agencies D. B. Armstrong, M. D., Sc. D., of New York, says that it is a move toward the "destruction of American institutions of freedom."

Writing in the June 15 issue of *The Journal of the American Medical Association,* Dr. Armstrong disclaims responsibility of the National Health Council for the recommendations issued in the Gunn-Platt report in 1945. The report, directed primarily to professional public health workers, recommended a complete reorganization of the national voluntary health agencies and the pooling of their fund raising efforts.

Although technically the study was made under the auspices of the council, Dr. Armstrong, a former president and first executive officer, says that the recommendations should be credited solely to Selskar M. Gunn, C. P. H., and Philip S. Platt, Ph. D., grantees of the Rockefeller Foundation.

The Gunn-Platt report urges, among other things, the establishment of a health council in every community representing a voluntary unification of all local health societies. The report deplores the lack of central direction and planning and duplication of effort; it urges that present separate money-raising appeals be coordinated into a nation-wide campaign and asks that the two agencies with the most effective money-raising devices — the tuberculosis and infantile paralysis groups—broaden their fields of interest and service.

History indicates, the author says, that this effort, the third of its kind, urging consolidation of the independent health organizations, will fail. Dr. Armstrong states that "indeed, the primary objective of the council in the early 1920s was merger. While many other things attempted succeeded, merging failed completely. In the mid 1930s another major effort at amalgamation into one agency was made and again failed. Both those attempts were direct and honest approaches and convinced some participants and observers, at least, of the futility and lack of wisdom of the effort. Now, through the Gunn-Platt study and report, a third indirect and more devious approach is being made, this time working from the periphery inward. It is our opinion that this too is doomed to failure and that the idea is now 'going down for the third time.' The next time it is fished out of the roiled waters it should, it is to be hoped, be recognized as 'a dead cat.' "

Some of the facts and fallacies which have led the author to the conclusion that merger is both improbable and unwise follow in part.

Facts:

"1. It is a fact that the national voluntary health agencies can do and are doing advantageously certain things in common. These include not only common mechanical services such as rentals, accounting, supplies, telephone service, shipping and library, but also many other mutual interests which can, to a degree at least, be best served in common, such as certain phases of research, the development of health educational activities, personnel recruiting and management, statistical services, certain phases of state and local field organization and control and increased cooperation with non-member organizations.

"2. It is a fact that resources for the several important voluntary health movements are uneven. This is of course inevitable. It is easier to raise money for infantile paralysis, for instance, than it is for venereal disease control. It is probable that there are important causes such as venereal disease control that will always need special help and that cannot raise funds as adequately by popular appeal as do the infantile paralysis, tuberculosis, cancer and other movements. Venereal disease efforts may have to find their chief support from large givers, or arrangements might be made whereby they could share in the more generously financed movements.

"3. It is a fact that previous efforts at voluntary health consolidation failed, and for inherent, basic reasons. Such a unification on the national level would be contrary to the American tradition and possible only in a regimented society.

"4. It is a fact that there are in our country two kinds of people who want the consolidation of voluntary health agencies and who are willing to sacrifice freedom to regimentation with the object of economy, efficiency and more complete control. The first group is composed of that portion of the social workers, statisticians and community organizers who are communistically inclined. The other group is made up of business executives who favor a unification of appeals, who like the local community chest idea because it means fewer requests for appropriations and because it means that actually in most instances they and their business will have to give less in total than they would if faced with a number of separate demands. Actually these two groups have the same collective ideology and the same desire for organized monopoly."

Fallacies:

"1. It is a fallacy to assume that the public is averse to multiple agencies. The individual citizen generously supports the agency or agencies in which he is especially interested, often because of some personal or family experience. During the last few years, when the public was supposed to be consciously overburdened and annoyed, agencies have developed more rapidly in number and volume than in any equal prior period. Never were so many new programs launched. Never have separate movements met with such generous financial support from the public. The tuberculosis seal sale reached an all time high in 1945. The infantile paralysis control movement has grown by leaps and bounds. Two separate national cancer drives within the last two years have raised approximately $8,000,000,

(*Concluded on Page 140*)

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AT LAST

The American Psychiatric Association, representing about 4,000 psychiatrists throughout the United States and Canada, at its Annual Meeting in Chicago, May 25 - May 30, passed the following resolution.

1. "To set forth the actual status of mental hospital care of patients throughout the country.

2. "To state the reasons why deficiencies have always existed and have been aggravated by war conditions.

3. "The American Psychiatric Association will support and take immediate steps to give effect to the last three paragraphs in the report of May 26, namely;

"The Committee is in favor of the American Psychiatric Association assuming its rightful leadership, by taking more positive and aggressive steps for achieving success in its endeavor.

"The American public will not consider psychiatry as a legitimate scientific branch of medicine as long as mental patients are treated in institutions with a cost of a minimum of sixty-five cents per capita per diem and a maximum cost of two dollars per capita per diem.

"The Committee believes the American Psychiatric Association should become more realistic and demand that every state mental hospital consider a minimum of five dollars per capita per diem necessary for the care and treatment of acute, sub-acute and convalescent cases and two dollars and fifty cents per capita per diem for the care of various types of chronic cases.

4. "The Council will set-up machinery for the inspection and rating of all mental hospitals; and to bring to the attention of all state authorities deficiencies requiring correction.

5. "The Council is also of the opinion that by supporting wholeheartedly the Psychiatric Foundation the aims of psychiatry as outlined will be greatly advanced by the collaboration of lay and professional groups.

6. "That the American Psychiatric Association urge general medical and surgical hospitals to include in their plans for development a psychiatric inpatient service. Such publications as the "Modern Hospital" should be requested to carry an editorial on this matter in one of their early issues.

"Furthermore, that the Council of the American Psychiatric Association take the initiative in gaining the cooperation of the American Medical Association and the American Hospital Association in joint support of this recommendation.

7. "To authorize the Secretary of the American Psychiatric Association to send copies of these resolutions to the authorities of each state requesting them to consider the above paragraphs prerogative for future improvement of mental hospitals."

It is our opinion that every physician in this state should wholeheartedly approve the above and fully support the new approach of the American Psychiatric Association in regard to the standards and policies of psychiatric hospitals and out-patient clinics.

OPPOSES MERGER OF VOLUNTARY HEALTH AGENCIES

(Concluded from Page 137)

and another one is now being terminated for an even larger amount.

"2. It is a fallacy to claim that the trend is all toward consolidation. . . . In reality, the trend on both the national and the local level is definitely away from consolidation.

"3. It is a peculiarly silly fallacy that the amount of funds that the public will make available for voluntary health effort can be increased by burying the special appeals in an anonymous approach. . . . It would be fatal for the voluntary health agencies to give up their independent, free access to public support.

"4. It is said, we believe fallaciously, that socialization in medicine and public health is inevitably coming on a national scale as regards official activities, and that a parallel development is therefore essential in the voluntary field. This is a two-barreled fallacy, and the trigger is pulled by the same individuals. The same small group of persons are pushing the socialization idea through both official and voluntary channels. They work behind the scenes for the destruction of American institutions of freedom. It is important that their aims and activities should be understood by us all."

'COLD WAVE' REACTION

An acid used in the process of hair curling known as a "cold wave" has been found to produce symptoms of poisoning in allergic and anemic persons, according to Lawrence H. Cotter, M. D., of New York.

Writing in the June 15 issue of *The Journal of the American Medical Association,* Dr. Cotter, who is from the Department of Medicine, College of Physicians and Surgeons, Columbia University and the Presbyterian Hospital in New York, says that the "cases in which a toxic reaction has been observed appear to be on the increase."

The author attributes the recent increase in cold wave poisoning to the fact that the "process is more widely advertised, and cheaper, with the result that less skilled operators now employ it. Its former high price confined its use to a small clientele in the better class establishments."

Experience with patients having thioglycolic poisoning indicates, the author says, that "persons suffering from allergies and anemias are the most likely victims, but the acid has an established affinity for the protein molecule, and liver damage to some extent may be anticipated from prolonged exposure in any individual." However, in the majority of cases recovery occurs without permanent liver damage when the exposure is promptly terminated.

Thioglycolic acid has been used in industry as an iron indicator with no reported ill effects on the handlers.

Some of the major symptoms noted among the patients have been swelling of the face, arms and legs, appearance of an itching rash, and loss of hair.

Dr. Cotter warns that "at the present time an outfit for home use has been out on the market, and it should be recognized as a danger in unskilled hands, and even in skilled hands to a certain proportion of the beauty seekers."

Among the several case histories cited by the author is one of a 52-year-old woman who "had not handled any thioglycolic acid preparation but had a 'cold wave' of her own hair. As soon as the acid solution was applied she felt an intolerable burning sensation, which persisted for three days in spite of all attempts to wash off the acid. She also had severe cramps and itching all over the body." A week after receiving a second patch test from her doctor she had swelling of the hands and feet and enlargement of the armpit lymph nodes, as well as the itching and burning, and her hair came out in large patches.

When seen in the laboratory, this woman had dark patches on her skin and denuded areas on her scalp. She appeared emaciated and nervous. Eventually, the author says, "her symptoms cleared up except for an intermittent burning sensation of the scalp."

The author concludes: "Now that this product is being sold in the chain stores, its indiscriminate use will result in an increased incidence of poisonings, many of which are already finding their way to the courts. Adequate labeling and understanding of the dangers involved are imperative."

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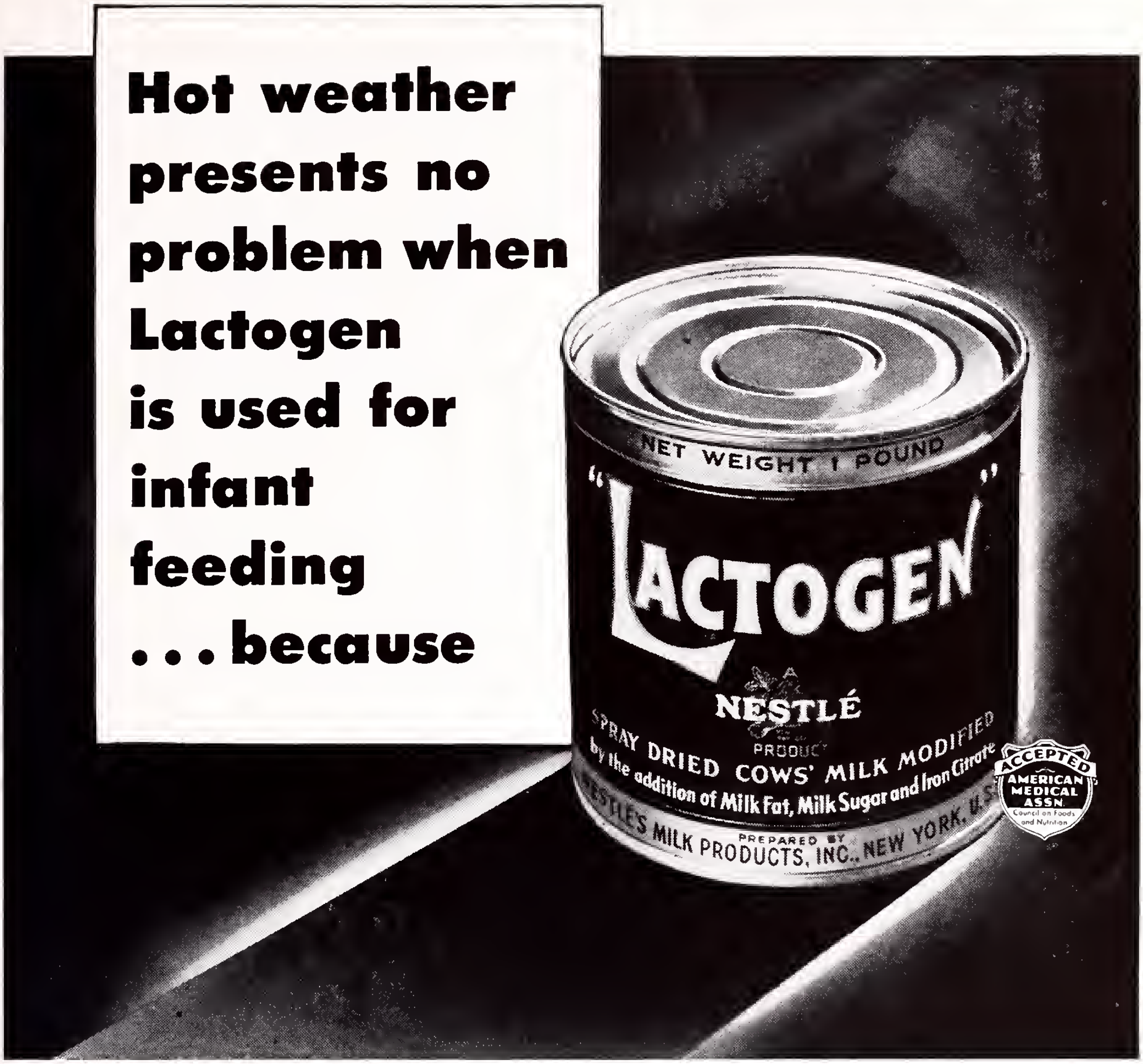
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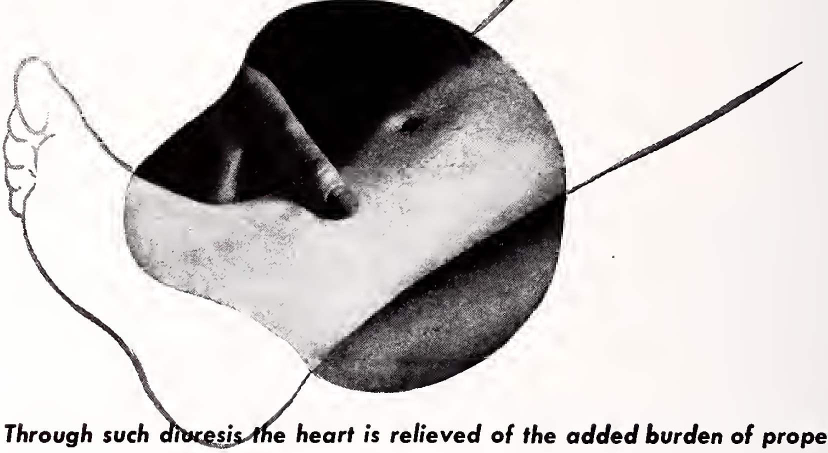

Through such diuresis the heart is relieved of the added burden of propelling the blood through the compressed blood vessels. The blood volume is decreased, and in all probability the efficiency of the heart is increased by elimination of myocardial edema.

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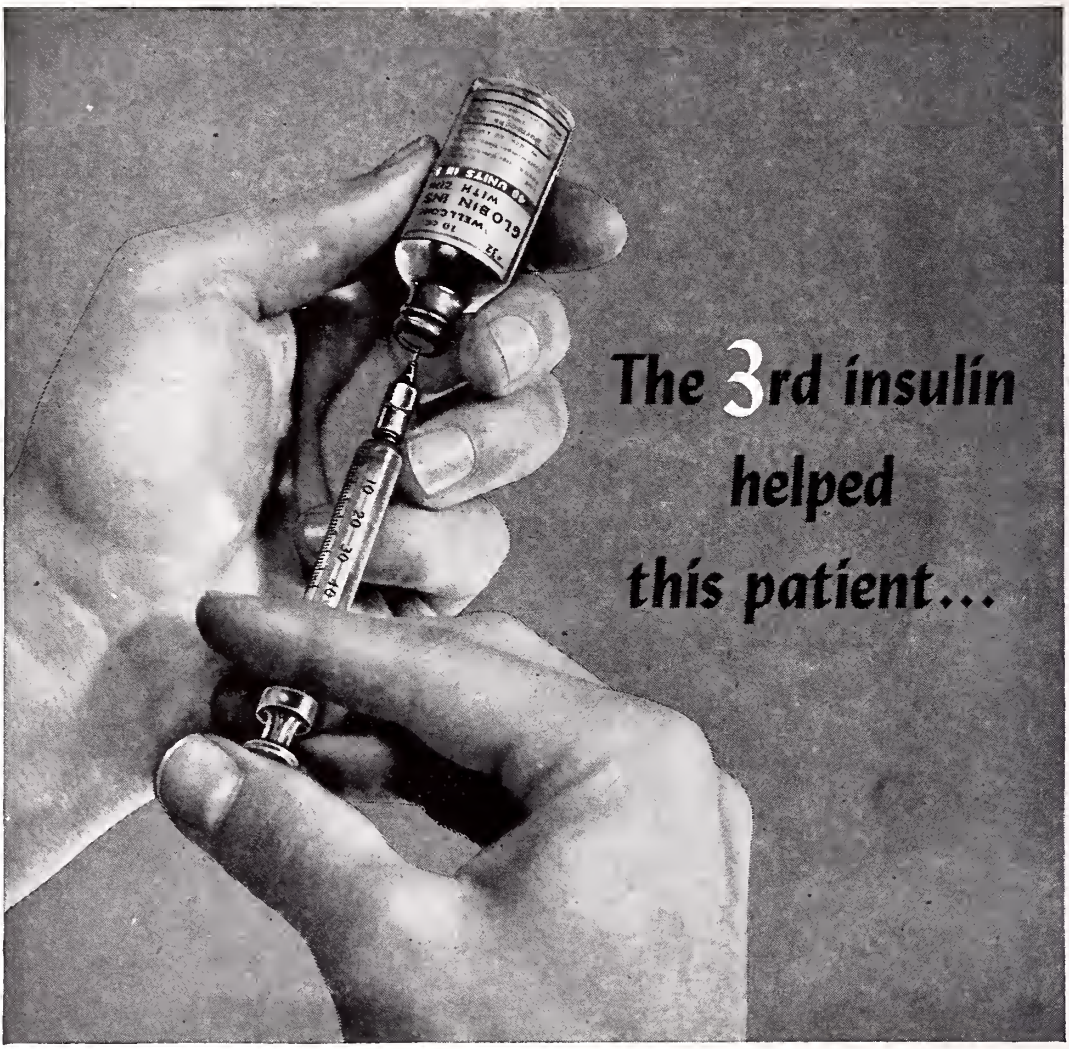

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(1) It carries on a continuous educational campaign throughout the State to interpret to its citizens the accomplishments and needs of the Delaware State Hospital, the Mental Hygiene Clinics, the Delaware Colony, and other Delaware institutions and agencies dealing with mental hygiene and emotional problems.

(2) By talks, discussion programs, newspaper and radio publicity, the Society strives to remove the stigma, in the minds of many people, connected with the problem of mental disease in their families, and urges early diagnosis and treatment.

(3) Organizes mental hygiene programs for educational, nursing, social work, Red Cross, religious groups, women's clubs and service clubs in Delaware.

(4) Is engaged in a five-year research and demonstration program to see if transferable techniques for use by teachers with school children can be discovered which will assist in raising the emotional maturity of the average graduate of the schools in this State.

(5) Conducts demonstration Human Relations classes in schools throughout the State to give teachers and school administrators practical experience in mental hygiene problems in the classroom, and at the same time to give children in these classes a better understanding of the important part emotions play in their lives.

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Proc. Soc. Exp. Biol. and Med., 1934, 32, 241
N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.

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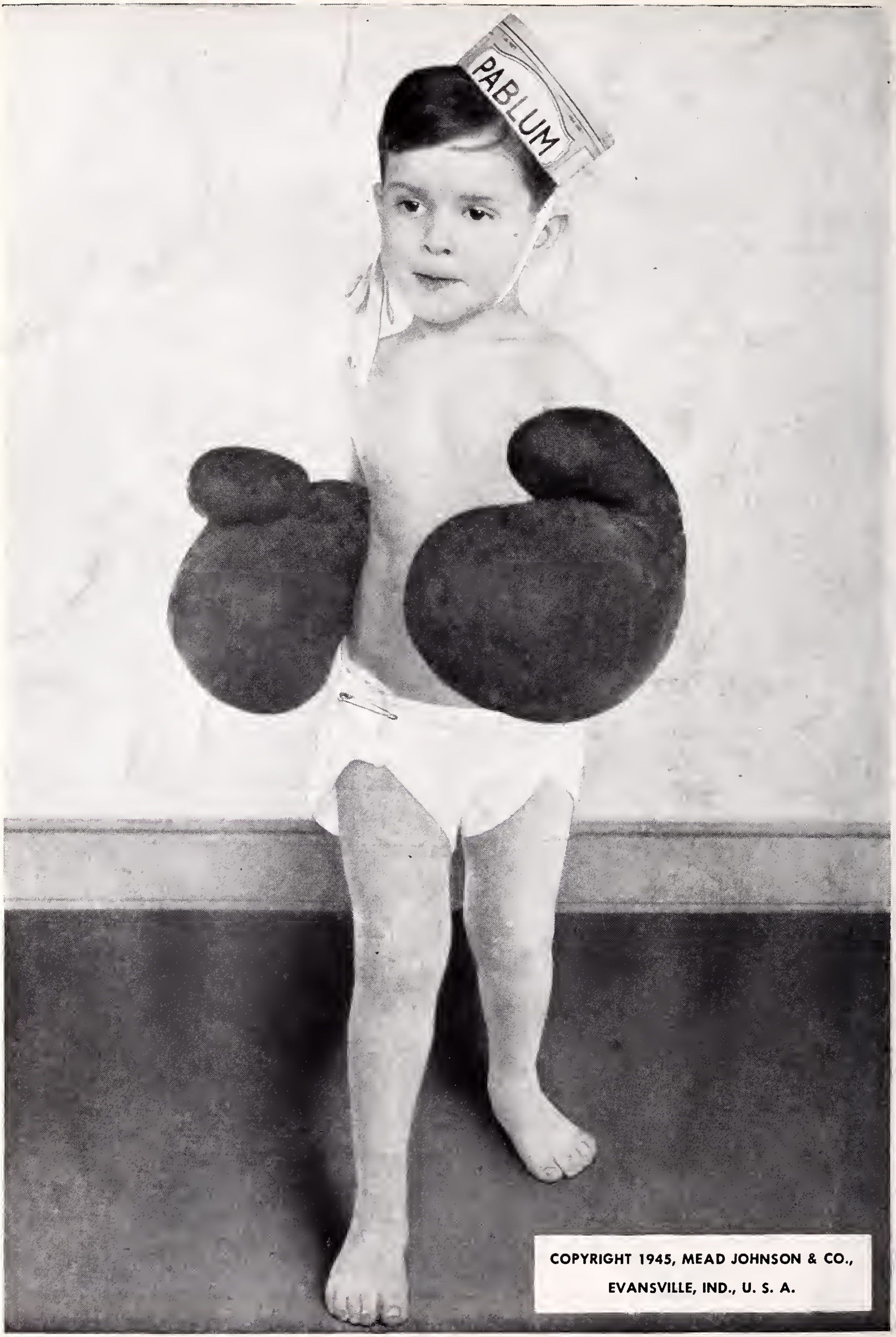

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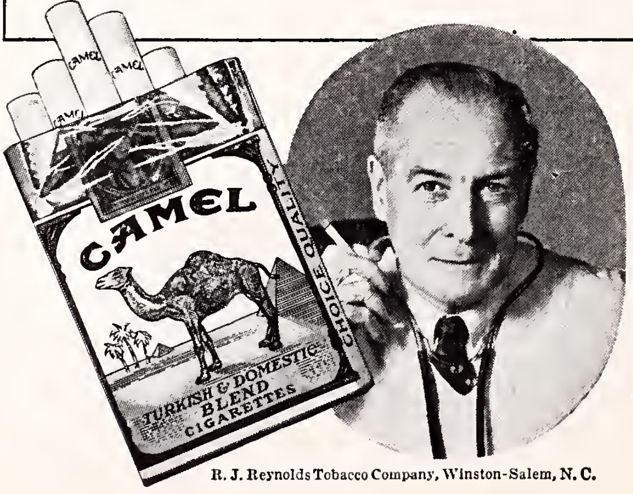

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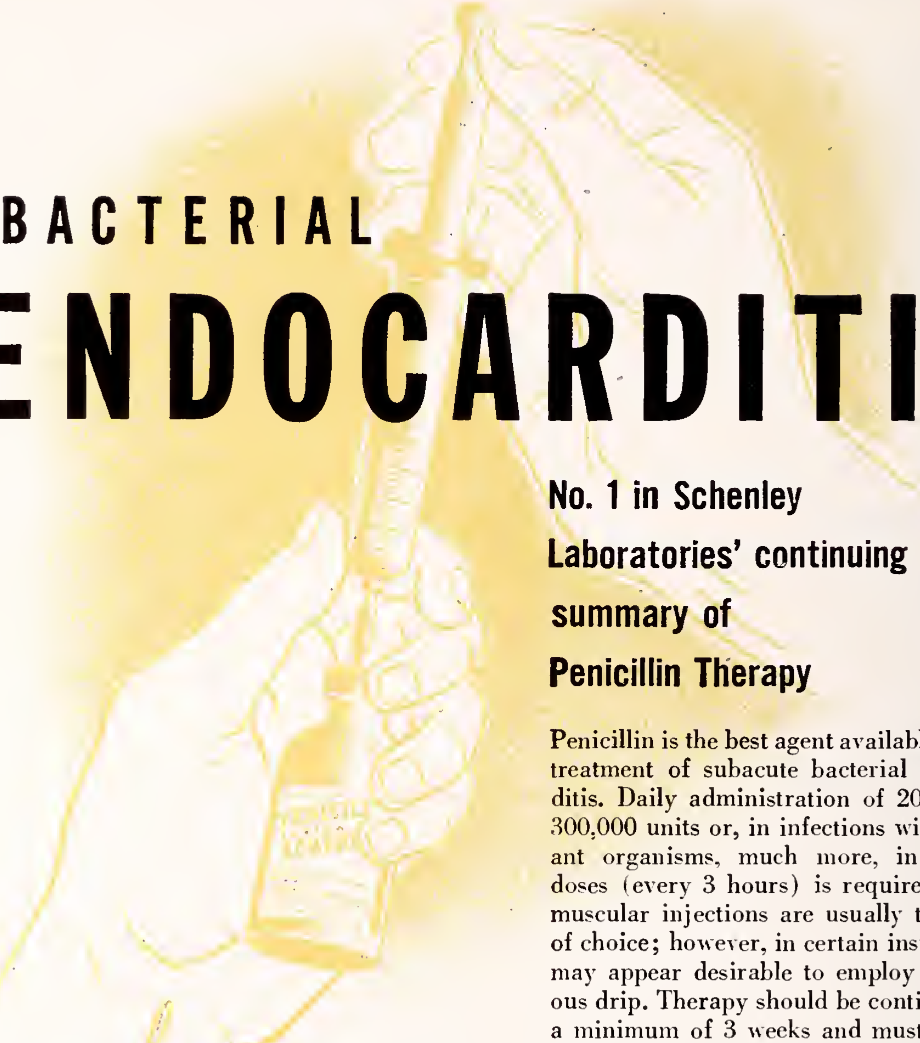

BACTERIAL

ENDOCARDITIS

No. 1 in Schenley Laboratories' continuing summary of Penicillin Therapy

Penicillin is the best agent available for the treatment of subacute bacterial endocarditis. Daily administration of 200,000 to 300,000 units or, in infections with resistant organisms, much more, in divided doses (every 3 hours) is required. Intramuscular injections are usually the route of choice; however, in certain instances, it may appear desirable to employ continuous drip. Therapy should be continued for a minimum of 3 weeks and must be continued until the blood cultures are consistently negative. Penicillin alone is as effective as penicillin and heparin combined.

Final determination of cure depends upon long-term observation, but if the patient remains asymptomatic and bacteriologically free for a period of 4 weeks after cessation of penicillin therapy, the prognosis for complete cure is excellent. However, it must be remembered that valvular damage and renal lesions are not favorably influenced.

DAWSON, M. H., AND HUNTER, T. H.: *The Treatment of Subacute Bacterial Endocarditis with Penicillin: Results in Twenty Cases, J.A.M.A. 127:129 (Jan. 20) 1945*. . . FAVOUR, C. B.; JANEWAY, C. A.; GIBSON, J. G., II, AND LEVINE, S. A.: *Progress in the Treatment of Subacute Bacterial Endocarditis, New England J. Med. 234:71 (Jan. 17) 1946.*

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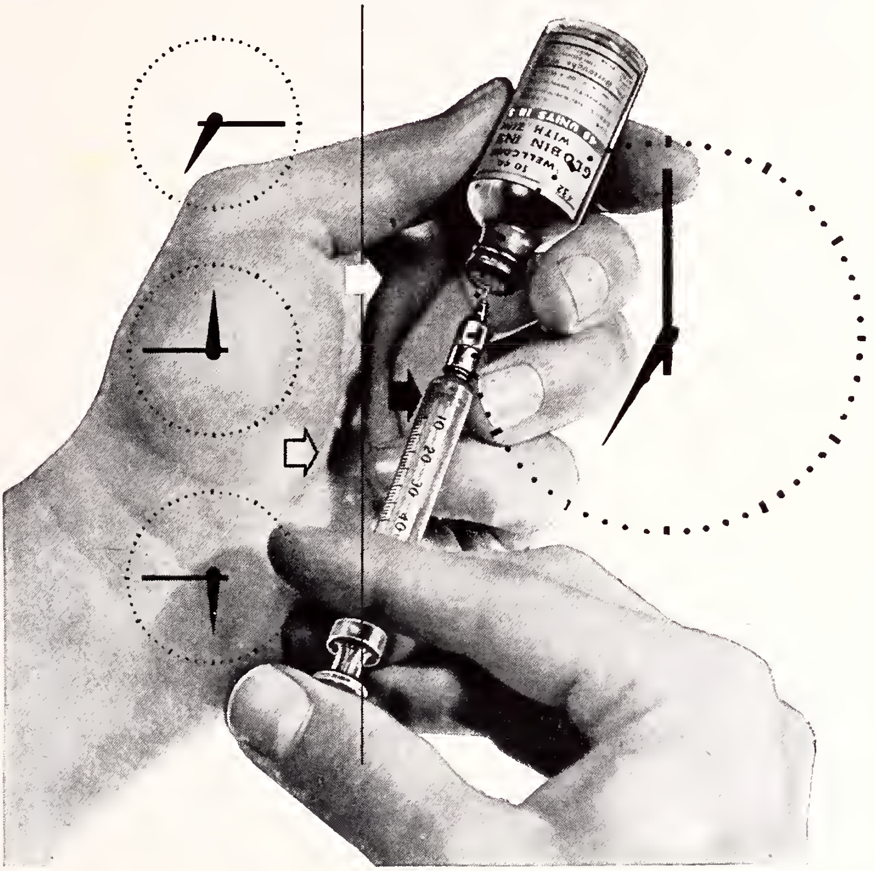

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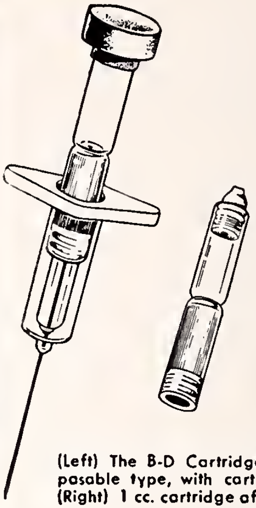
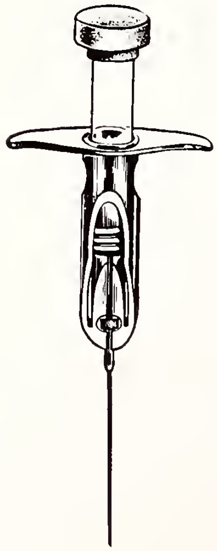


(Left) The B-D Cartridge Syringe, disposable type, with cartridge inserted. (Right) 1 cc. cartridge of penicillin in oil and wax.

The B-D Metal Cartridge Syringe with cartridge inserted.



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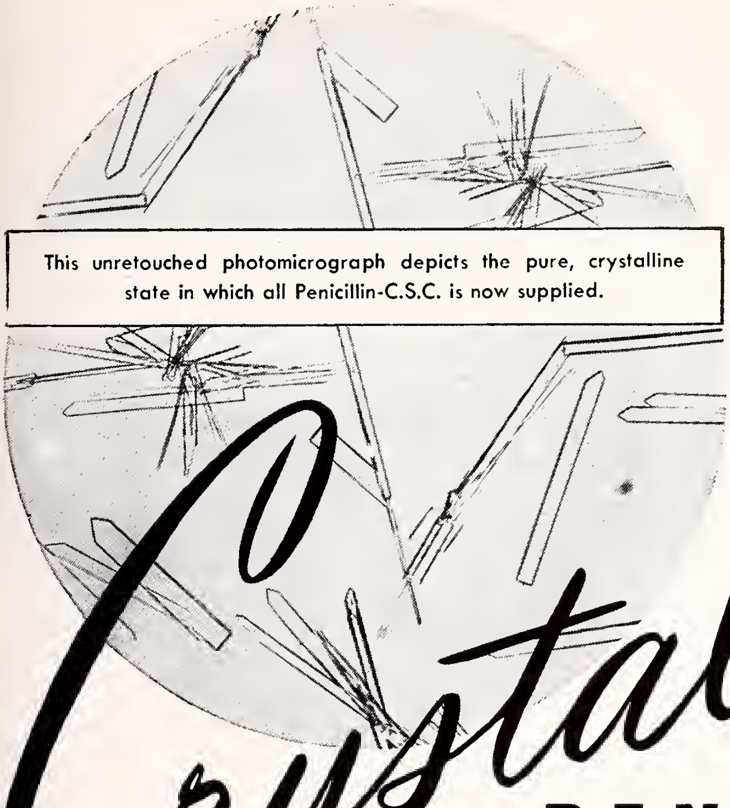

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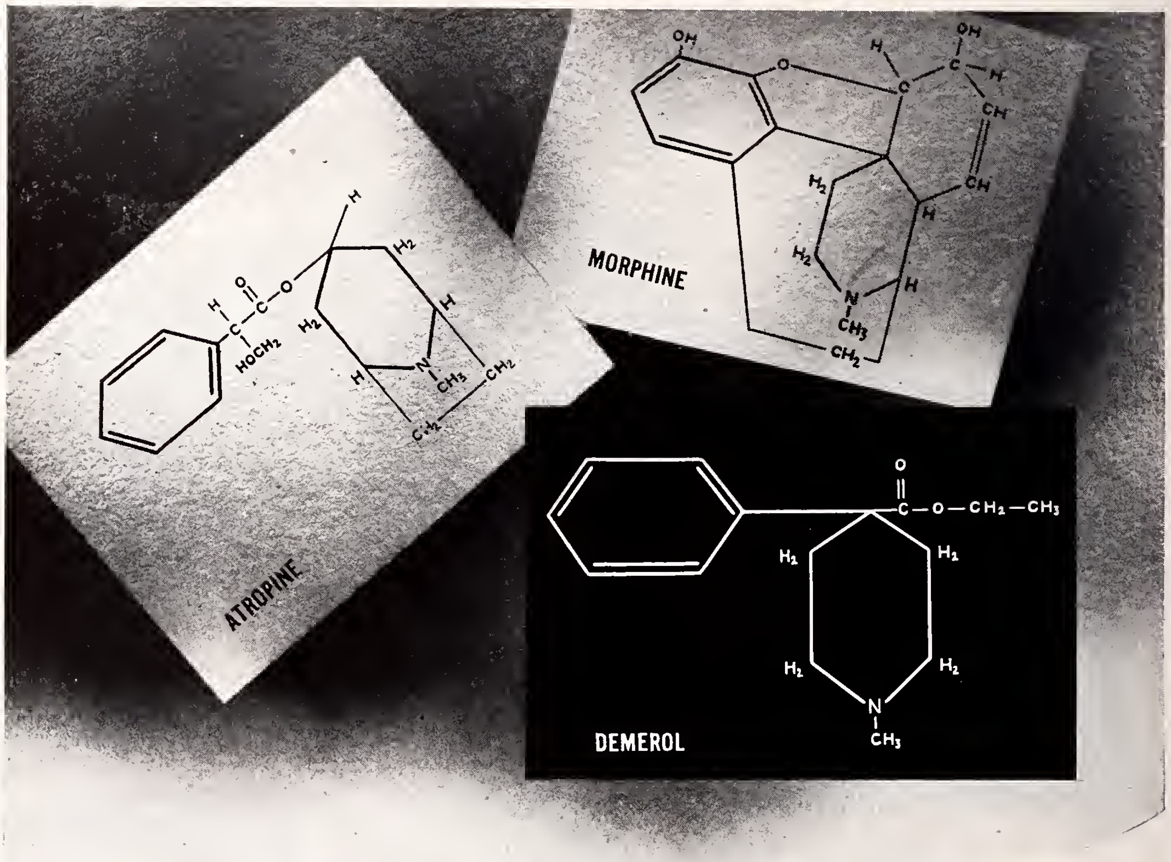

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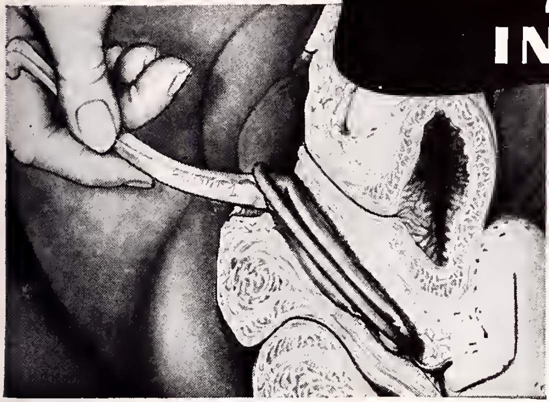

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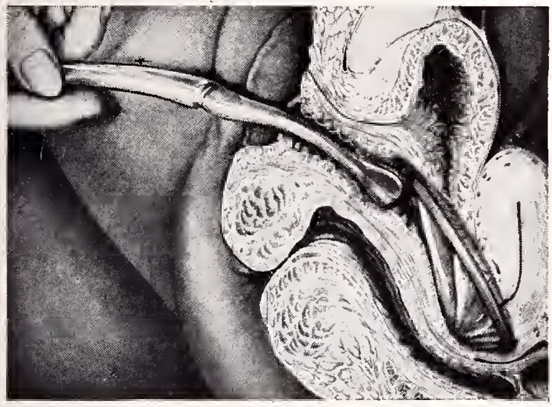

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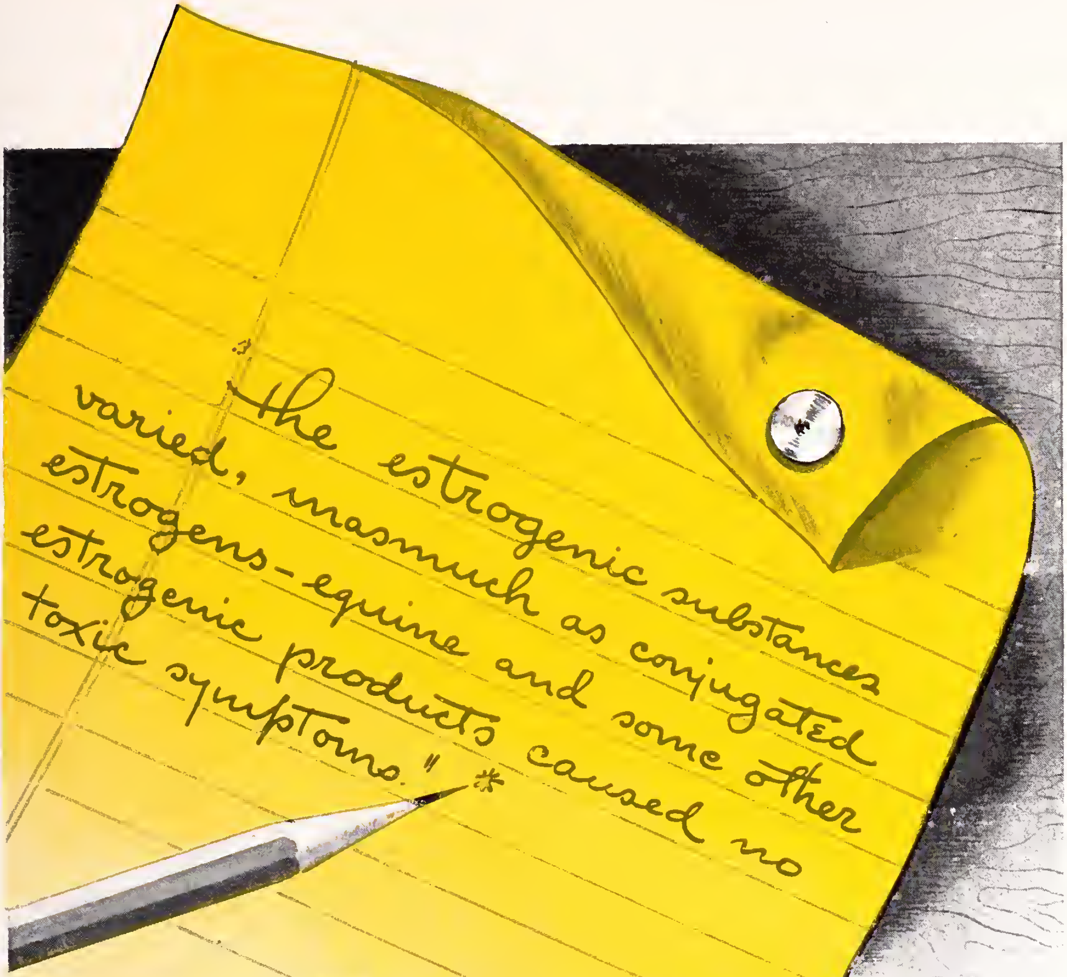

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THERE is little rest for the busy physician even after the responsibilities to his patients have been satisfactorily discharged. Medical journals subsist entirely on the writings of physicians. The articles, designed for the purpose of sharing knowledge with others, require arduous toil, and time not available during office hours. It is well to remember then, in reading medical journal papers, that some physician somewhere may have worked far into the night with the hope that his colleagues would benefit.

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TORULA HISTOLYTICA (CRYPTOCOCCUS HOMINIS) INFECTION[*]

Report of Case Refractory to Sulfonamides

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Wilmington, Del.

Approximately eighty instances of torula histolytica meningitis have been reported in the literature. Less than half have been diagnosed before death. Tuberculous meningitis, encephalitis, lymphocytic choriomeningitis and encephalomalacia are some of the conditions mistakenly diagnosed. There has been a surprisingly high incidence of Hodgkin's disease[1] associated with torulosis. Many cases have involvement of the lungs as well as meninges.[2,3,5] General torulosis is much less frequent, as mentioned by Burger and Morton,[20] who reported the fourteenth such case. The case reported here is probably the fifteenth. The yeast-like organism is very prevalent in nature, having been found in wasps' nests, insects, stems of grasses and plants and in canned milk.[3,5,5] It is frequently found on the skin surface as a saprophyte. Apparently it becomes pathogenic for man, only when, for some so far unknown reason, its virulence is greatly increased. The resulting disease has been considered almost universally fatal, although some cases have lived many months. The treatment has so far been unsatisfactory. Repeated lumbar puncture has given greatest symptomatic relief. A galaxy of medicaments has been used, including autogenous vaccines, arsenic, iodides, colloidal silver, thyroid, gentian violet, tartar emetic, acriflavine, methenamine, mercurochrome, and tyrocidine.[6,7,8,17] Marshall and Teed[9] called attention to reports[10,11,12] of localized torula infection in parts of the body, aside from central nervous system, in which the prognosis is fairly good. They also mentioned three instances of apparent remission in torula meningitis. One case, reported by Binford,[13] was living a year after diagnosis, with the organism still present in the spinal fluid. The second case was reported by Toone[14] in which the infection had lasted twenty months at the time of the report. The third case, reported by Reeves, Butt and Hammock[15] was probably the first case to receive sulfonamide therapy. This patient, a girl of fifteen, seemed quite well two and a half years after the original acute torula infection. The authors felt, however, that improvement in both chest and spinal fluid findings began before sulfonamides were given, and probably was not affected by the moderate amount of chemotherapy administered. Marshall and Teed[9] then went on to report in detail a case of a seven-year-old girl operated upon for bilateral mastoid disease, in which destroyed mastoid cells were found sterile on culture, and in which no torulae were found on the mastoid smears but in which a torula meningitis was found by lumbar puncture immediately after operation. Spinal fluid culture and smear showed torulae in large numbers. A rather prolonged convalescence followed. Sulfadiazine therapy was instituted and the child seemed to be well five months later. No torulae were found in the spinal fluid after the third day of treatment. The authors felt that the improvement or possible cure was due to the sulfonamide. If such should prove to be the case, it represents the only such instance reported. Cohen[16] reported a case of torulosis with binocular papilledema and associated with Hodgkins' disease, in which he administered sulfadiazine to give a spinal fluid level of 7.1 mg.%, without discernible effect. Tinney and Schmidt[17] gave sulfadiazine to one patient for thirty days with a blood level of 5 mg.% and obtained no therapeutic effect. Another patient improved with a sulfathiazole blood level over 6 mg%.

More recently Jones and Klinck[18] concluded in a case report that neither sulfonamides nor penicillin were effective for the strain of torula isolated from their patient. Most of their evidence is from in vitro experiments rather than from therapeutic trial. At the same time that Jones and Klinck were observing their case we were using sulfonamides in another case, a report of which follows.

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[*] From the Departments of Medicine and Pathology, Delaware Hospital.

CASE REPORT

L. McD., a forty-nine-year-old Negro, was admitted to the Delaware Hospital on October 26, 1942. He complained of drowsiness and headache of six months duration. He was mentally sluggish and did not answer questions intelligently. His nutrition was poor and there was marked general weakness. The pupils reacted normally. The tongue was coated. There was bilateral crusty nasal discharge. The heart was negative on physical examination. The abdomen was soft and no masses were palpable. There was an old, deep, healed sinus tract in the lower right abdominal quadrant. Rectal examination was negative.

In the past he had been operated upon elsewhere in 1926 for gangrenous appendicitis. A fistula remained, necessitating two subsequent operations.

COURSE IN HOSPITAL

He had an irregular fever, 97° F. to 102° F. His mental condition varied but on the whole became progressively more dull and irrational. He was depressed and disoriented, but there was no active delirium. There was no stiffness of the neck.

10-26-42—Admitted to hospital.

11- 1-42—An infection related to the old sinus tract was suspected. However, a barium enema was quite negative, as was also a retrograde pyelogram and cystoscopic examination. Lipiodal injected into the sinus tract revealed no connection with any sinus or cavity.

11-16-42—An x-ray of the chest (Fig. 1) revealed a rounded mass about 7½ cm. in diameter, posteriorly at the right lung base. The heart was normal by x-ray.

11-19-42—The spinal fluid was clear but the pressure was increased to 400 mm. water. Cell count 500 per cu. mm.

11-30-42—Chest x-ray, no change.

12-21-42—Chest x-ray. Mass at right base was slightly larger.

1- 4-43—Torula histolytica was first isolated from spinal fluid.

1-20-43—Material aspirated from the mass in the right chest showed torula both on smear and culture. (Fig. 2)

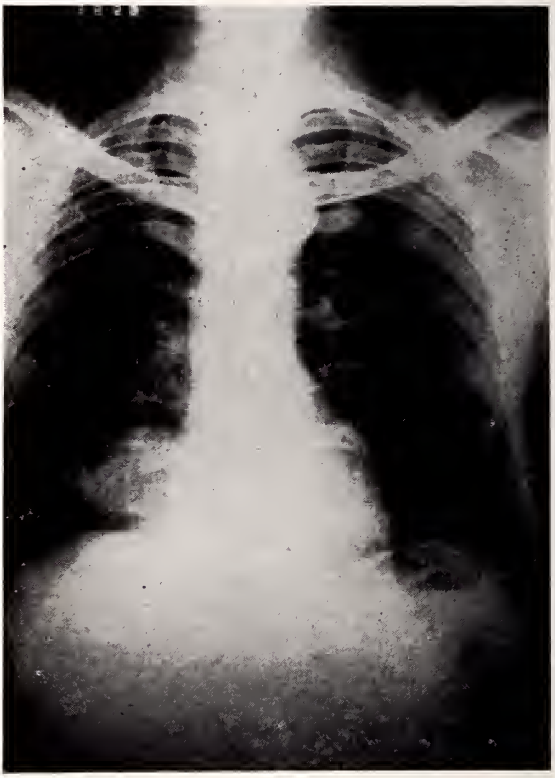

Fig. 1 — Mass in right lower lung field due to torula.

6- 8-43—Died after several months of therapy summarized below.

LABORATORY FINDINGS

Urinalyses were repeatedly negative except for some increase in W. B. C.

Blood Picture: Nov., 1942, R. B. C., 5.2 m.; Hb., 11.5 gm.; W. B. C., 7,200. March, 1943, R. B. C., 5.0 m.; Hb., 11.5 gm.; W. B. C., 5,200. Differential essentially normal.

Blood Sugar: 116 mg.%.

Blood Urea: N., 13 mg%..

Blood Cultures: Five were made, with no growth.

Blood Wassermann: Negative.

Stool Cultures: Negative for enteric disease group.

Blood Serum: Agglutinations were found negative with typhoid, para-typhoid A & B, Brucella. Proteus OX19, and B. tularense antigens.

Spinal Fluid: Average pressure, 500 mm. of water. Cell count, 300-500 per cu. mm., mostly small lymphocytes. Proteins, 270 mg.%; Sugar, 15 mg.%; Sodium chloride, 600-700 mg.%; Pandy, 3-4%; Wassermann, negative. Torula histolytica was recovered from spinal fluid and chest lesions, but not from the sinus tract.

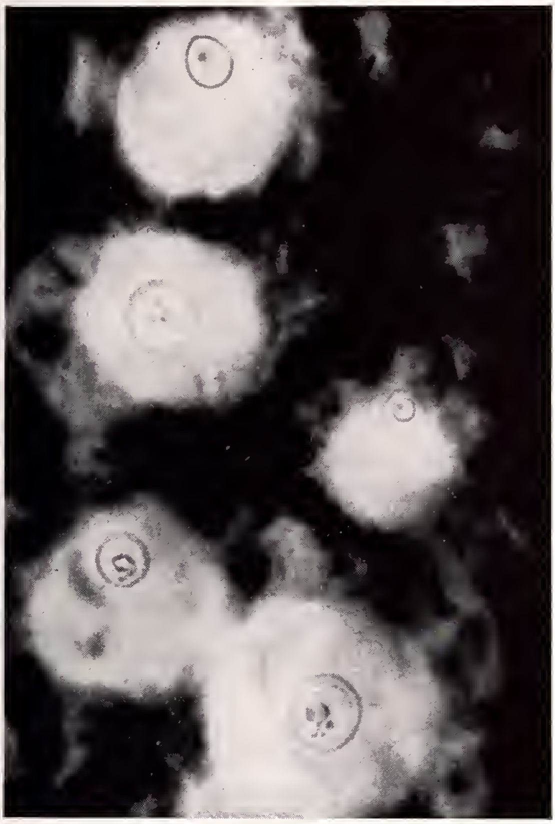

Fig. 2 — India ink preparation of material aspirated from lung lesion.

Therapeutic Summary

11-26-42 to 1-3-43—Sulfathiazole daily, every 4 hours. 45 gm. total.

1-10-43 to 2-2-43—Sulfadiazine daily, every 4 hours. 115 gm. total. Blood level, 8 mg.%; spinal fluid level, 4.5 mg.%.

2-12-43 to 3-8-43—Potassium iodide, 20 gr. t. i. d.

2-17-43 to 3-8-43—Sulfathiazole daily, every 4 hours. 100 gm. total. Spinal fluid level, 1.4 mg.%.

3-11-43 to 3-24-43—Antimony and Potassium Tartrate, 5 cc. of a 1% solution i. v. every 2nd day.

3-26-43 to 4-1-43—10 cc. of a 1% solution Antimony and Potassium Tartrate i. v. daily.

4-1-43 to 4-13-43—15 cc. of a 1% solution i. v. daily.

Bacteriological Studies

Sediment of spinal fluid received 1-4-43 was inoculated to Brewer's thioglycollate medium, Sabouraud dextrose agar plates, incubated at room and 37° C. temperature, and a blood agar plate. Stained films of sediment revealed no gram-positive, gram-negative, or acid-fast bacteria. After 24 hours incubation, visible growth appeared on blood agar and both Sabouraud plates, as a well-defined, minute, elevated, whitish, circular, glistening, pin-point colony, films of which showed gram-positive, yeast-like, budding forms. After 72 hours incubation, the organism grew as a yellowish, pasty colony 1 mm. in diameter, with no hemolysis on blood agar; and as a greyish, mucoid colony 2-3 mm. in diameter, with a tendency for colonies to run together, on Sabouraud plates. No growth occurred on thioglycollate medium.

Re-examination of cultures of previous specimens inoculated on 11-20-42 and 12-1-42, on Wallenstein's egg-yolk medium (for T. B.) showed a mucoid, confluent, yellowish-brown growth, with a marked tendency to slide down the slant. India-ink preparations (Levin) of this growth showed typically double-contoured, highly refractive, round and oval yeast-like forms 5-6 mm. in diameter, with a marked halo, or capsule surrounding each cell. Methylene-blue stained films showed budding forms, with no hyphae.

The organisms grew well in nutrient and glucose acid broths, with a slightly turbid supernatant and finely granular sediment. Carbohydrate broths showed acid production only in dextrose and sucrose, with no change in maltose, mannite, lactose, xylose, rhamnose, and dulcitol broths after 8 days incubation. A hanging dropbroth-agar preparation showed no mycelia or spores after 8 days incubation. Although no animals were injected, it was felt that the organism described fulfilled the morphologic and cultural characteristics of torula histolytica.

India-ink preparations of material obtained by lung aspiration 1-28-43 showed the characteristic halo appearance of torula (Fig. 2) and cultures of same gave identical reactions as previously described.

Torula histolytica was repeatedly cultured from the spinal fluid in which the sulfonamide level was 3 to 4.5 mg.%.

IN VITRO EXPERIMENTS

In an attempt to make a rough estimation, in vitro, of the relative antibiotic effect of various sulfonamides, Sabouraud dextrose agar slants, pH 7.4, were prepared with sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine, sulfacetamide and sulfaguanidine in concentrations ranging from 1:5000 to 1:200,000. These were then inoculated with 0.1 cc. per tube, of a saline suspension of the organism, prepared from a 24 hour Sabouraud slant. After 24 and 48 hours incubation, macroscopic growth was apparently equal on media containing sulfonamides, and controls.

AUTOPSY FINDINGS—6-9-43.

External Examination—Body is that of an extremely emaciated Negro of 49 years, displaying marked muscular atrophy of all extremities, as well as an apparently healed sinus tract opening in the lower portion of the right upper abdominal quadrant.

Internal Examination—There is a moderately thick fibrinopurulent exudate over the visceral pleural surface of the right lower lobe of the right lung. The pleural surfaces elsewhere are unaltered and the pleural cavities contain no fluid. The pericardium is thin and almost translucent. The sac contains only the normal amount of thin serous fluid. The peritoneal cavity contains no fluid. There are dense, tough connective tissue adhesions between the cecum, ascending colon and the anterior peritoneal surfaces of the abdominal cavity.

Aorta—The elasticity of the aorta is moderately diminished and its intimal surface is the seat of numerous thin yellowish gray atheromata. There is no distinctive evidence of luetic aortitis.

Heart—Weighs 280 grams. A thin unscarred epicardium overlies a uniformly flabby, dull, reddish-brown myocardium. The mural and valvular endocardium show no lesions of note. The coronary arteries are not prominent but their intimal surfaces do display thin yellowish-gray atheromata.

Lungs—Right weighs 700 and left weighs 375 grams. The bronchi, particularly those leading to the right lower lobe contain thick, tenacious mucilagenous material. The pulmonary vessels show no lesions of note. The right lower lobe presents on cut surface a large irregularly circumscribed, but well defined moderately firm, yellow-gray, glistening mucoid mass 6.5 cm. in diameter which is surrounded by moderately firm reddish-purple lung parenchyma, the cut surface of which is covered with syrupy purulent material. The right middle lobe is sub-crepitant and displays a moderately bloody and moist cut surface. The lower portion of the right upper lobe displays small, moderately firm, grayish-white peribronchial lesions which are slightly raised above the cut surface of the slightly blood reddish-gray parenchyma. The left upper lobe is normally crepitant and displays a dry pinkish-gray cut surface. The left lower lobe is subcrepitant and displays a bloody reddish-brown cut surface.

Lymph Nodes—No lymph nodes are palpable peripherally. The nodes of the para-aortic and mesenteric groups are slightly enlarged, moderately soft and pearly gray.

Spleen—Weighs 110 grams. A thin capsule overlies a moderately firm, uniformly dark brick red parenchyma, the cut surface of which reveals numerous skein-like trabeculae but no follicles.

Kidneys—Right weighs 125 and the left 150 grams. The renal capsules are very thin and adherent. The renal parenchyma bulges when cut. The calices and pelvices are normal. The cortico-medullary boundaries are blurred. The parenchyma is soft, flabby and reddish-brown. The cortical surfaces are finely pitted and scarred.

The ureters are not dilated and appear normal. The urinary bladder displays some slight submucosal hemorrhage but no other lesions of note.

Genitalia—The external genitalia show no lesions of note. The lateral lobes of the prostate are not unduly enlarged.

G-I Tract—There is a small pedunculated polyp arising from an otherwise normal appearing gastric mucosa. The duodenum and jejunum show no lesions of note the mucosal surface of the terminal ileum, cecum and first portion of the ascending colon displays thin irregular transverse shallow ulcerations. The transverse colon, descending colon and rectum show no lesions of note.

Liver—Weighs 1250 grams. A thin capsule overlies a moderately firm uniformly brick-red parenchyma, the cut surface of which is slightly bloody. Gall bladder and bile ducts —gall bladder has a thin tough greenish-gray wall and its lumen contains a small quantity of yellow bile. The bile ducts are patent.

Pancreas—Pancreatic lobules are normal in size, moderately firm and yellowish-gray.

Adrenals—The adrenal cortices are a grayish-yellowish-brown and overlie moderately firm grayish-white medullary tissue.

Thyroid—Appears normal to external palpation.

Brain—Weighs 1390 grams. The brain is closely applied in the cranial vault. The pachymeninges show no lesions of note The leptomeninges are flecked with thin mucilagenous greenish-gray purulent material, which is particularly prominent around the larger cerebral veins. There is a large amount of this exudate over the posterior surface of the right cerebellar hemisphere. The vessels of the circle of Willis are intact. There is no apparent evidence of hemorrhage or thrombosis of the brain parenchyma, which, on longitudinal section, shows in the left frontal lobe an irregularly outlined but well circumscribed, moderately firm, glistening mucoid, yellowish-gray mass, approximately 4 cm. in diameter. It is very similar in appearance to the lesion described in the right lower lobe of the lung.

Microscopic

Heart—The muscle fibers show a generalized moderate atrophy with some fraying of the fibers and an increase in lipochrome pigment around the nuclei of the muscle cells. There is an occasional small focal area of fibrosis. There is no evidence of torula in the section of myocardium reviewed.

Lungs—(Fig. 3) The moderately firm, yellowish-gray, glistening, mucoid mass 6.5 cm. in diameter described, grossly displays a supporting structural framework of fibrin strands which are separated by a thin mucoid or gelatinous material. Within the ill-defined areas bounded by the irregular network of fibrin are many diffusely scattered torulae, as well as, oddly enough, what appear to be lipoid-containing macrophages, and an occasional centrally multinucleated giant cell, the cytoplasm of which also has a suggestively lipoid-containing cytoplasm. At the ill-defined borders of this torulae containing mucoid mass, there are no epitheliod cells or other cellular elements suggesting a tuberculoid lesion.

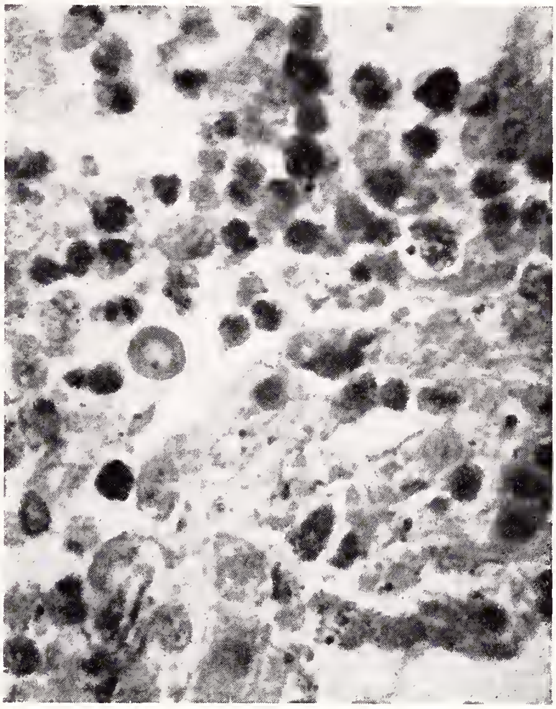

Fig. 3 — Torula in section from lung. Magnification x100.

The small moderately firm, grayish-white peri-bronchial lesions described grossly in the right lower lobe are focal areas of bronchopneumonia characterized by alveoli which are filled for the most part with polymorphonuclear leukocytes surrounding diffusely scattered torulae. In addition are present lipoid-containing macrophages, hemosiderin-filled macrophages and an occasional macrophage showing phagocytosis of leukocytes. The bronchiolar lumina contain a similar type of exudate and small aggregates of other bacteria in addition to scattered torulae. These clumps of other bacteria are also present in the alveoli.

There are several areas in the right upper lobe of the lung in which these focal areas of bronchopneumonia have coalesced to form a confluent bronchopneumonia. The pleural surface of the right lung exhibits a thin fibrino-purulent exudate containing no torulae.

Lymph Nodes—The architecture of the mesenteric and para-aortic lymph nodes in general is well preserved. The lymph sinuses are slightly dilated and contain reticulo endotheliel macrophages. No torulae are seen any place in these nodes and there is no evidence of Hodgkin's disease.

Spleen—The sinusoids are prominently dilated and contain red cells and many hemosiderin filled macrophages. No torulae are seen. There is one small healed focal tuberculoma which was not observed grossly.

Kidneys—The glomeruli show no changes. The tubular epithelium shows moderate parenchymatous degeneration. There is moderate congestion of the renal capillaries. No torulae are seen. There is moderate arteriosclerosis of the interlobular arteries.

G. I. Tract—The small pedunculated polyp of the gastric mucosa is made up of widely dilated gastric glandular acini showing a low columnar epithelium and containing a gelatinous mucoid material within the lumina of the glands in which is an occasional torula.

An ulcer removed from the ileum shows a thick, central, necrotic slough, has undermined overhanging edges of normal mucosa and scattered small shrunken torulae at its base.

Liver—The architecture is not altered and the hepatic cells show only a slight degeneration. The medullary cells are well preserved and there is no evidence of torula.

Brain—(Fig. 4) The brain parenchymal cells show moderate degenerative changes. The cerebral vessels are dilated and blood-filled and there is evidence of moderate cerebral edema. The solitary lesion in the left frontal lobe has the same histological appearance as that described under lung; with the exception that small blood vessels within the lesion show a thin collar of monocytic cells and in some instances a collar of lipoid containing macrophages. Particularly outstanding again is the lack of any inflammatory cellular change at the juncture of the lesion with the cerebral parenchyma.

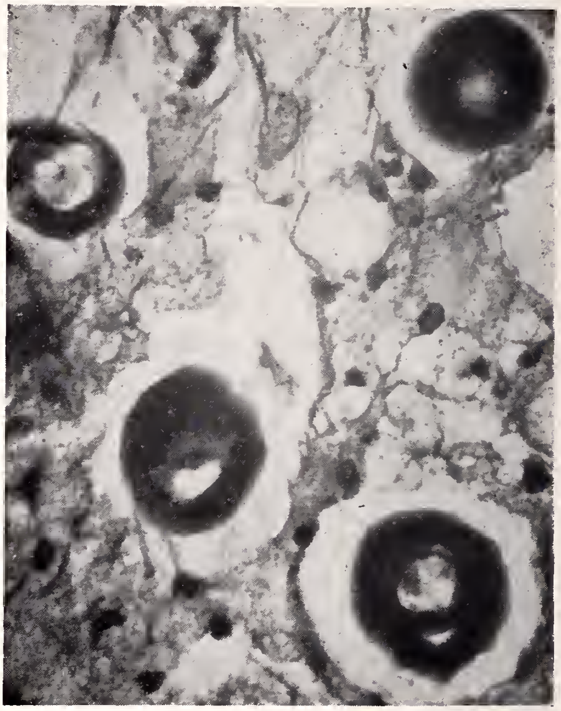

Fig. 4 — Torula seen in section from meninges. Magnification x900.

In addition to the large solitary lesion several smaller focal collections of torulae are seen. Only one of these areas has provoked a cellular reaction and in this instance the plasma cell is the predominating cell.

Histological Summary

1. Larger mucoid gelatinous cerebral and pulmonary lesions were seen in this case than have been described in the literature up to this time.
2. There was a diffuse and focal bronchopneumonia in addition to the large gelatinous lesions in which torulae are present.
3. A polymorphonuclear leukocytic cel-

lular reaction was present without any evidence of the so-called tuberculoid reaction recorded by several authors.

4. There were torulae lesions in the stomach, ileum, caecum and ascending colon. This is in itself unusual and has only been reported in the literature in about fourteen other instances.[20]

5. There is no evidence in the lymph nodes of Hodgkin's disease or torula.

COMMENT

Torula histolytica infection of the meninges with or without involvement of other viscera is almost universally fatal. A number of patients have, however, lived from many months to a few years. Sulfonamides have been used in very few of the reported cases.[9,16,17,19]. Conant et al,[21] in an excellent summary of torula infections, report two cases in which sulfadiazine was used, one of which succumbed, the other was continuing to improve at the time of the report. Both these patients, however, had only primary pulmonary involvement. In only one other case[9] did this type of chemotherapy seem effective, and even in that instance the patient had been apparently well for only one month prior to the date of the report. The organism from another case has been studied carefully in vitro and found refractory to sulfonamides.[18]

In the present case, no effect was observed after prolonged heavy dosage of sulfonamides. Torulae were found at autopsy to be very wide spread, involving the brain, meninges, lung, stomach, cecum, and ascending colon. The involvement of the gastro-intestinal tract raises the interesting speculation that in this instance the original torula infection may have occurred through the long-standing fecal fistula. In this patient the disease may have been too far advanced when treatment was started to expect any marked response. However, the growth of the organism was also found to be entirely uneffected by six different sulfonamides in carefully controlled in vitro experiments. It seems then that the sulfonamides are not effective against most strains of torula histolytica. Whether penicillin will be effective, as suggested by Dawson et al,[19] remains for further clinical trial to determine.

CONCLUSION

1. A case of torula histolytica (cryptococcus hominis) infection involving the meninges, brain, lung, and gastro-intestinal tract is reported, with autopsy findings.
2. Sulfathiazole and sulfadiazine were found to be totally ineffective against torula histolytica in this case, both in vitro and in vivo.
3. From data available at present it is probable that sulfonamides are ineffective therapeutically against most strains of torula histolytica.

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TULAREMIA: A CASE TREATED WITH STREPTOMYCIN*

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Heilman[1] first reported that mice experimentally infected with lethal doses of *Pasteurella tularense* recovered completely when streptomycin was given subcutaneously in divided doses. Following this work, Foshay[2] reported seven cases of human tularemia successfully treated with relatively small doses of parenterally administered streptomycin. A noticable feature of his report was the greatly shortened duration of illness.

Recently the opportunity of treating a case of tularemia was presented. A supply of streptomycin was obtained for therapeutic trial from E. R. Squibb and Sons, released through the courtesy of Dr. Chester S. Keefer, Chairman of the Committee on Chemotherapeutics of the National Research Council.

Case Report

Mrs. Mary G., a 48-year-old graduate nurse, first developed symptoms on November 26, 1945, 24 hours after cleaning a rabbit the "dogs caught." On the previous day, the patient sustained a nail-file puncture wound beneath the right thumb nail.

Prodromal symptoms included generalized body aches, slight nausea, chilliness and a fever of 99.4° F. These increased in severity and on the following day the right thumb was red, swollen and painful. Signs of lymphangitis and lymphadenitis were apparent and involved the forearm, epitrochlear, axillary and supra-clavicular nodes. Six days after onset the patient was prostrate, with all symptoms markedly exaggerated and a temperature of 104.4° F.

At this time, December 2, 1945, the patient was hospitalized and penicillin therapy was instituted. After the administration of approximately 2.0 million units of the drug without response, the patient was then placed on sulfadiazine therapy. Thirty grams of this drug was given without appreciable response. Continuous magnesium sulphate compresses during this period resulted in a localization of the thumb lesion, which was incised and drained, with relief in pain and some amelioration of the lymphatic infection. During this period the temperature remained elevated, with slight daily variations of 1-2 degrees F.

On the seventh day of illness an irritative, non-productive cough developed. An x-ray of the chest was reported negative except for "pleural thickening at the left base." On the 14th hospital day the temperature dropped to 98° F., remaining between 98-100° F. for the next 5 days. The patient was then discharged, improved, on her 19th hospital day, with a diagnosis of influenza and infected wound of the right thumb. The laboratory studies performed during this admission showed a slightly elevated leukocyte count and an albuminura with red and white blood cells present.

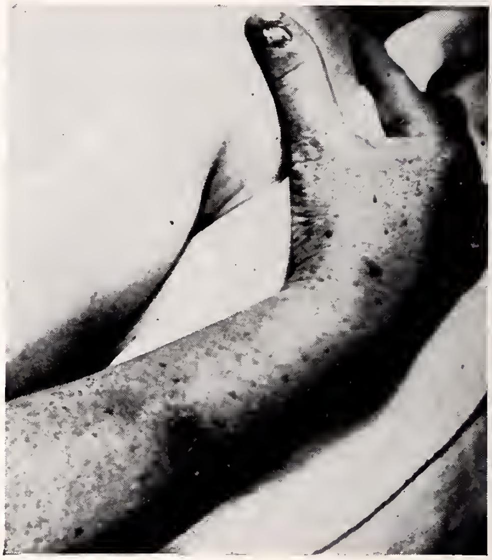

Fig. 1 — Photograph showing site of primary lesion and miliary abscesses of arm, before streptomycin therapy (2nd hospital admission).

The patient had remained at home since January 23, 1946 (57th day of illness), when she was first seen by this author. She gave the history previously noted, and reported daily temperature fluctuations reaching 101° F., since her hospital discharge. Malaise, anorexia and lymphadenitis made it impossible for her to perform routine household duties without frequent rest periods throughout the day.

Physical examination was essentially negative, except for the presence of four pea-sized, fluctuant abscesses on the volar aspect of the right forearm; several enlarged, indurated, palpable axillary nodes; and a fluctuant mass about the size of an orange, pointing just above the mid-portion of the right clavicular region.

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On January 26, 1946, the abscess was incised and drained under general anesthesia. Approximately 6 ounces of thick, grey pus was evacuated and the cavity was packed with plain gauze. The operation wound healed completely in two weeks. The pus and a blood specimen were submitted to the laboratory for study. On January 26, 1946, blood for culture and agglutinzation, and pus from incisional drainage were received. These materials were cultured on blood agar plates (incubated in 10% CO_2), thioglycollate broth and Difco-glucose-cystine-hemoglobin agar slants. Patient's serum agglutinated *Pasteuralla tularense* antigen through a dilution of 1:1280. No growth was obtained on any media after 10 days' incubation.

Following the operation, the patient's temperature ranged from 98-99° F. and there was some clinical improvement. However, in early February, an axillary gland broke down, which necessitated incision and drainage on February 18th (83rd day of illness). A similar specimen of pus was submitted to the laboratory, which reported that "guinea pigs inoculated subcutaneously with pus obtained January 30 and February 18, 1946, remained well after 20 days' observation.

The patient's condition remained unchanged and in March another axillary gland became swollen and inflamed, with no signs of fluctuation. On March 27, 1946 (120th day of illness) the patient was again hospitalized, and after preliminary laboratory studies, streptomycin therapy was instituted.

Patients' admission laboratory studies showed a normal urinalysis, an excretion of 27% phenolsulphonphthalein in 15 minutes, a sedimentation rate of 22 mm. in 60 minutes, and a blood count of 5.0 million R. B. C., 14.8 grams hemoglobin, 5,400 W. B. C., and a normal differential count.

On March 27, 1946, 4.0 gm.* streptomycin sulfate were received for therapeutic trial. At Dr. Keefer's suggestion, each ampule was diluted with sterile normal saline to contain 60 mg. per ml., and 1 ml. was administered intramuscularly every 3 hours around the clock, for 8 days. Blood for assay was obtained at 1, 2 and 3-hour intervals each day (at 8 p. m., 3 p. m. and 7 p. m.), along with a 24-hour urine specimen for assay and routine analysis. Blood and urine were assayed for streptomycin content by the technic of Price, Nielsen and Welch[3] of the Food and Drug Administra-

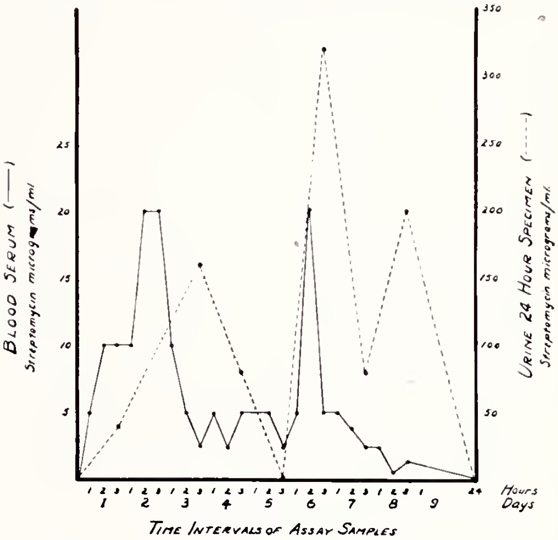

Fig. 2 — Results of streptomycin ossoys on blood ond urine.

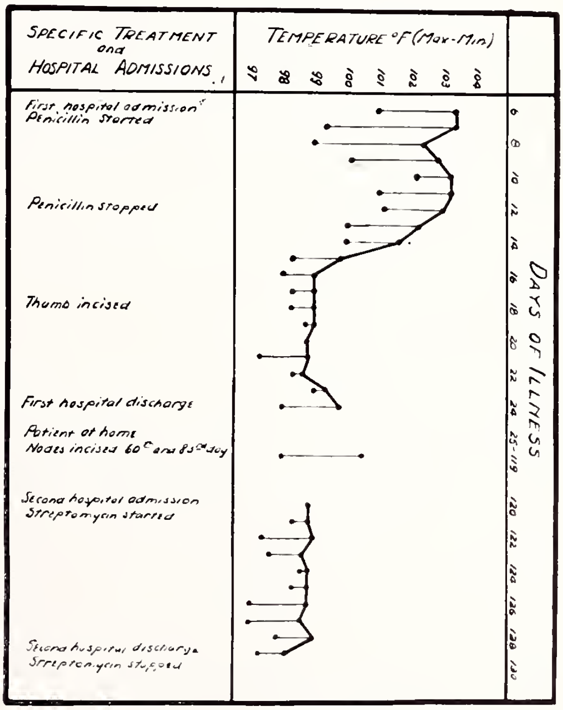

Fig. 3 — Course of illness.

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* 4.0 Gm. is equivalent to 4,000,000 units, when compared with the pure base; therefore 1 unit = 0.001 mg., or 1 microgram.

tion, employing a tube dilution technic and *Bacillus circulans* as the test organism. Streptomycin standard was prepared from appropriate dilutions of the administered drug.

As indicated in the following chart (Fig. 2) blood serum levels ranged between 0.6-20.0 micrograms per ml., and urine levels between 40-320 micrograms per ml. This range is in accord with previously reported figures, Reimann[4] having noted that there were irregularities in levels obtained with similar dosage in the same and in different patients. Calculated on a percentage basis, the urinary recovery figures average 41.5% (11-133%). This is slightly lower than reported recoveries (50-65%), but only undiluted and 1-10 dilutions were assayed. No streptomycin was detectable in the blood or urine 24 hours after medication was stopped. Daily urinalyses were negative for R. B. C. and albumin, the specific gravities varied from 1.009-1.019, and 24-hour volumes from 1350-2310 ml.

Comment

The objective criteria by which we observed the alterations in this disease process under streptomycin therapy were indeed dramatic. At the end of the first 48 hours' administration, the appearance of the arm was greatly improved. All erythema and induration had disappeared in the forearm, and the small abscesses had regressed completely. The axillary glands were decreasing in size except for one, which now showed signs of fluctuation, with absence, however, of inflammatory signs. Slight residual pain in the arm persisted, but the patient stated that, for the first time in several months, she "felt more like herself." At the end of the first 72 hours of treatment, the temperature was normal and continued thus, except for two occasions when there were elevations to 99° F. Therapy was completed on the 8th hospital day (131st day of illness) and the patient was discharged afebrile and generally improved. The only reaction to the drug was a mild, transient nausea, persisting for one hour after each injection for the first 48 hours of treatment.

On April 12, 1946 (139th day of illness), the fluctuant axillary node was incised under local procaine infiltration of the overlying skin, and approximately 1 oz. of clear, straw-colored fluid was evacuated, in sharp contrast to the previously described discharge. When last seen on June 3, 1946, the patient was asymptomatic, and there was no local or systemic evidence of the infection.

Summary

1. A case of human ulcero-glandular tularemia with a negative tularemic pneumonia is presented.
2. Refractoriness to full therapeutic doses of both penicillin and sulfadiazine was demonstrated.
3. After the 120th day of illness, a prompt clinical response was effected by the intramuscular injection of 4.0 gm. streptomycin sulfate (60 mg. every 3 hours), administered over an 8-day period. Substantial blood serum levels were attained.
4. Apart from a mild transient nausea, there were no local or general reactions from the use of streptomycin in this case.

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MYXEDEMA WITH CHOLESTEROSIS AND MASSIVE PERICARDIAL EFFUSION

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Case Report

The patient, M. J., a white female, age 57, was admitted to the Delaware Hospital on April 19, 1945, with abdominal swelling, ankle edema, cyanosis of the upper extremities and head, and marked exertional dyspnea. In 1939, the patient was studied in another hospital, with complaints of indigestion, constipation and infected kidney. In February, 1944, she went to her family doctor with the complaint that her skin bruised easily on the slightest touch and that it constantly itched. She stated that for 5 years that she had become short of breath on ordinary housekeeping duties and that for the previous 6 months this had increased so that she found it difficult to walk two blocks up a slight grade of 10 to 15 feet and that on climbing stairs she always had to rest once or twice. She reported a persistent cough. She also complained, as previously, of constipation which required a laxative every few days and she was constantly troubled with abdominal gas. Her appetite was always good. Physical examination at this time revealed a somewhat childish, middle aged female, with a husky, metallic voice. The lips and fingernails were cyanosed. The heart was slightly enlarged to the left, rate 120. Blood pressure 160/100. No murmurs noted. Her tongue was large, red with prominent papillae, furrows and some fissures. The skin was thin and dry, parchment-like with numerous bruises in various stages of recovery.

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* Pathologist, Delaware Hospital.

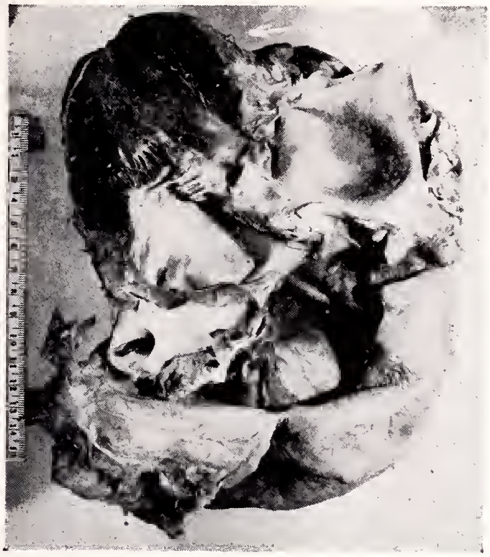

Fig. 1 — Heart and pericardium. Arrow points to cholesterol deposits.

In April, 1944, a B. M. R. was reported minus 20. Patient was placed on 1 grain of thyroid daily with phenobarbital and multiple vitamins. In September she was placed on 1 grain of digitalis, 5 times weekly. She appeared to be responding and was able to get around the house and outside. In January, 1945, she had become greatly cyanosed, dyspneic and had moderate edema of the ankles. The heart sounds were reported indistinct and the liver 4 fingers below the costal margin. She was treated with digitalis and bed rest. She seemed to improve with bed rest until March, 1945, when the heart sounds were reported feeble and distant. Thyroid medication was stopped and hospital study recommended, this was refused as had been previously. At this time there was marked ascites. The left chest was flat through the mid-scapula. The blood pressure had fallen to 120/90.

After cardiac consultation, in April, 1945, the patient was admitted to the hospital on April 19, 1945. Admission physical examination revealed a blood pressure of 104/80; temperature, 96°; pulse, 80; respirations, 22. The skin was brawny, tense and edematous. Extremities were short and spade-like. The voice was husky; left chest was flat to percussion; there was marked ascites; moderate dyspnea; cyanotic lips; pale mucous membranes; weak pulse; distant heart sounds. Urinalysis—Sp. Gr. 1.030; cloudy; acid; albumin, sugar and acetone negative; W. B. C. 20-30. The blood count revealed R. B. C., 4.4; Hemoglobin, 14.1 gms.; W. B. C., 5,300; Lymphocytes, 18%; Polys Seg, 76%; Polys Non-Seg. 3%; and Monocytes, 3%; Urea Nitrogen, 13.4 mg.%; Blood Sugar, 129 mg.%; Total Protein, 6.4 mg.%. On April 20, 1945, paracentesis yielded 3,120 cc. of clear, watery,

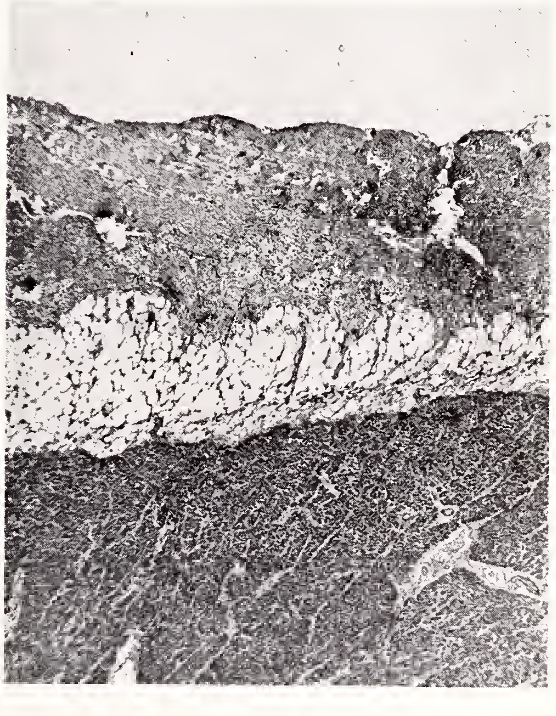

Fig. 2. — Heart.

greenish fluid which sparkled in bright light and appeared to contain fine, yellow, crystalline material. The patient's temperature remained sub-normal, cyanosis deepened and she died on April 22, 1945.

Autopsy Findings

Autopsy performed on April 22, 1945, five hours after death, revealed a myxedematous-appearing female with coarse features; dry, rough skin; no abnormal loss of hair; short spade-like extremities; pitting edema of the extremities and a distended abdomen. Internal examination revealed 500 cc. of fluid in the abdomen and 200 cc. in the left pleural cavity. The chest was distorted by a massive pericardium which practically filled the cavity and measures 23 cm. across. The pericardium contained 4000 cc. of dark, green, fluorescent fluid containing bright, sparkling, yellow cholesterol crystals, which chemical examination showed 76 mg.% cholesterol. The heart and pericardium weighed 750 grams. The heart itself was not enlarged, but smaller than normal, the pericardium was greatly thickened and both pericardium and epicardium were covered with soft, orange-yellow, cone-like deposits of cholesterol.

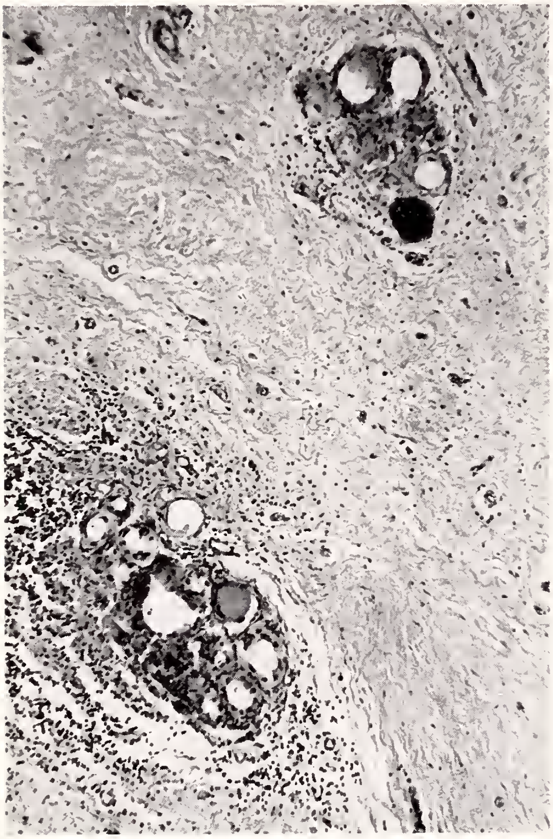
Fig. 3 — Thyroid, Riedel struma.

The heart muscle was dark brown in color and seemed to have a normal tone. The mitral valve showed slight fibrous thickening. The coronaries appeared normal and the aorta showed scattered atheroma. The lungs showed left compression atelectasis and right patchy edema and atelectasis. The liver showed chronic congestion and fatty changes. The gall bladder was filled with numerous 2-3 cm., soft, black stones. The kidneys showed slight nephrosclerosis. Neck dissection revealed no structure which was identifiable immediately as thyroid, but subsequent examination of the specimen removed, revealed 2 firm, grey-white, gristly structures about the same size as thyroid. Sections of the heart revealed lipoid granulomatous reaction of the epicardium.

Scarlet R stains of the heart revealed two varieties of fat present. Examination of similar tissue under the polarizing microscope showed double refractal crystals in the epicardium and myocardium. Section of suspected thyroid confirmed identity and revealed extensive fibrous replacement which Dr. Shields Warren of Boston, in a personal communication, diagnosed as Riedel's struma.

Discussion

The findings in this case are unusual. Pericardial effusions over 2000 cc. are not reported. There are only a few recorded cases of so-called myxedema heart in which cholesterol content has been measured.[1] These results are similar to ours and are accompanied with a slight elevation in the blood cholesterol. Similar cases of cholesterol pericarditis are almost impossible to find in the literature. Similar skin bruising as seen in this case was reported by Feasley.[3] The thyroid sections are remarkable for their lack of identifiable thyroid tissue.

The case adds another to the accumulating series which relates the existence of the so-called myxedema reversible heart.[1,2,3] It is becoming more apparent that the changes in cardiac size in myxedema under thyroid medication are due to the diminution of pericardial effusion.

As there have been very few myxedema cases come to autopsy, this case is most interesting.

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LYMPHOMA OF THE SMALL INTESTINE IN CHILDHOOD[*]

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Lymphoma of the gastro-intestinal tract is an uncommon disease. It accounts for about 1.9% of all malignancy of the digestive system.[1] Cutler et al,[2] make the following statement: "...a neoplasm of the intestinal tract in an infant or child should be considered lymphosarcoma until proven otherwise..." This statement is justified because of (1) the rarity of carcinoma of the bowel in children, (2) the infrequent involvement of the small intestine in carcinomatous change, (3) as Raiford[3] has shown, lymphoma shows no predilection for any certain age group.

The majority of lymphomas of the small intestine are believed to arise in the single small lymph follicles of the bowel. These follicles are plentiful in the ileum, fewer in the jejunum, and almost non-existent in the duodenum. Proportionately, the frequency of lymphoma follows the location of the greater distribution of the solitary follicles.

Warren and Lulenske[4] stress the distinction between local lymphoma and the generalized form of the disease. Lymphoma may be a solitary growth and remain solitary for many years. In one series studied it was concluded that metastasis to regional nodes and extension occurs late in the disease, if at all. It must be remembered, however, that these tumors may be only the first manifestation of a neoplastic imbalance of all of the lymphoid tissues. The distinction between these types of lymphoma cannot be made grossly or microscopically by the study of a solitary growth from the intestine. The beginnings of a generalized lymphomatous process and a solitary tumor present the same picture. In the series studied by Warren and Lulenski prognosis for the solitary growths was little better than for generalized lymphoma. The life expectancy in cases of solitary tumor, which have been completely removed by surgery, have apparently resulted in complete cure.

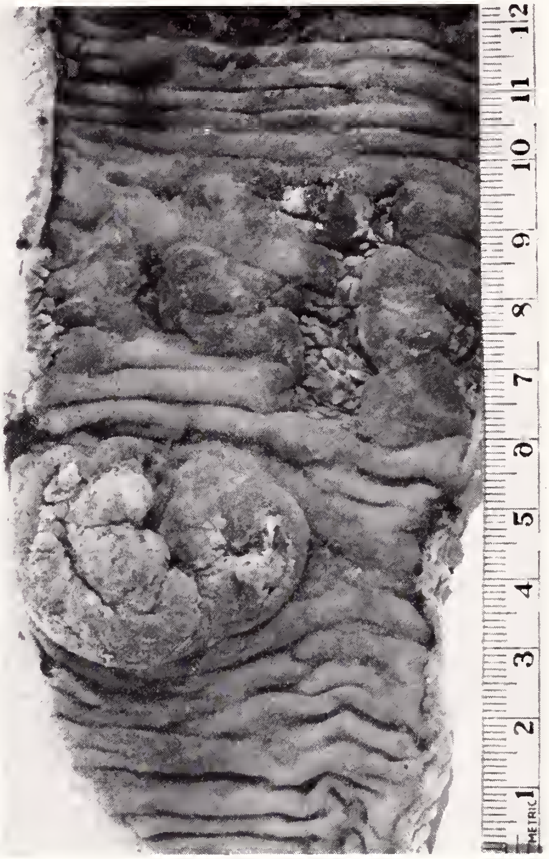

Fig. 1 — Lymphosarcoma of the small intestine in childhood.

Case Report

J. H., a ten-year-old, white male, was admitted to the Delaware Hospital with a chief complaint of abdominal pain of one month's duration. He had been operated on about one month prior to admission for appendicitis in another state. Following this operation, he continued to have abdominal pain and vomiting, and with a remission of these symptoms he was sent home. At home, however, the child continued to have dull, aching, occasionally sharp, epigastric and lower right quadrant pain. He also complained of a flatulence and a tendency to constipation. The patient had lost 10 pounds since the onset of his illness.

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On admission physical examination revealed a temperature of 99.6°; pulse rate, 109; and respiration, 20 per minute. The positive physical findings were limited to the abdomen, which was moderately distended and tympanitic. Peristalsis was decreased and no masses were palpable. There was no tenderness in any part of the abdomen. A scar in right lower quadrant was noted.

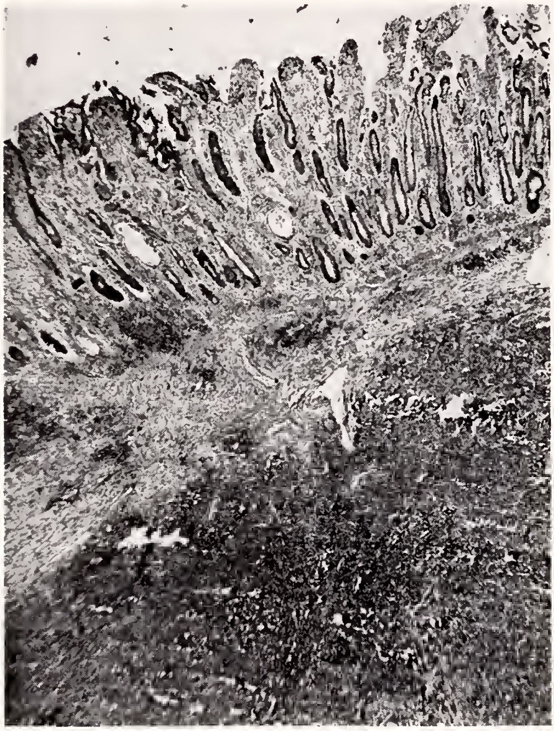
Fig. 2 — Lymphosorcoma of the small intestine in childhood.

A blood count and urinalysis were within normal limits.

An x-ray examination was unsatisfactory because of retained barium from a previous examination. However, the roentgenologist's opinion was that an obstruction existed in the lower end of the small intestine.

The symptoms of obstruction increased and the weight loss progressed until 30% weight loss existed. Surgery was postponed until the fifteenth hospital day in an attempt to relieve the distention and locate the obstruction with a Miller-Abbot tube. An effort was made to build up the child's general condition with whole blood, intravenous fluids, and vitamins. On the fifteenth day the abdomen was explored. On opening the peritoneal cavity, a small amount of free fluid was noted. The small bowel was distended down to a point 18 inches above the ileocecal valve, where there was a mass partially occluding the lumen of the bowel and extending through the serosal coat. Below the mass, the bowel was collapsed and normal. The distended bowel was markedly reddened and there were numerous soft, movable, small nodes throughout the mesentery. The ileum and colon were normal.

The involved portion of the bowel was resected, and an end to end anastomosis was done. Five grams of sulphanilamide were placed in the peritoneal cavity and the abdomen was cleared.

The pathological examination revealed an oval, nodular, edematous, soft tumor, measuring 4.5x3x1 cm., arising in the small intestine. The surface of the mass was covered with necrotic debris. The tumor extended through the wall and appeared as slightly elevated nodules on the serosal surface. The growth produced a partial obstruction involving all but 2 cm. of the lumen of the intestine. Above

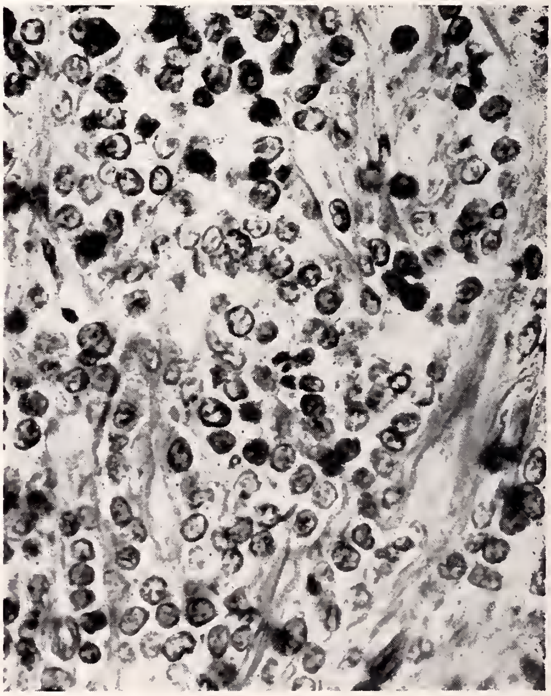
Fig. 3 — Lymphosarcomo of the small intestine in childhood.

the tumor, the intestine was dilated and showed deep ulcerative and hemorrhagic inflammation.

Microscopic examination revealed an infiltrating tumor arising in the wall and destroying the mucosa. The tumor extended completely through the wall and consisted of solid sheets of rather uniform, hyperchromic, large, nucleated, lymphocyte-like cells with a scanty cytoplasm. Throughout were narrow, fibrous stromal bands. The diagnosis was lymphosarcoma (small round cell lymphoma) of the small intestine.

The child made an uneventful recovery and was discharged on the fourteenth post-operative day. A two-month follow-up found the child to be in excellent health with a 30 pound weight gain.

The obstruction caused by lymphoma is not usually acute. The growth is not "napkin ring" and does not ordinarily obstruct the fecal stream. The involvement and destruction of the submucosal nerve plexuses with resultant loss of peristalsis simulates true obstruction.[5] In early childhood tumor of the ileum may cause intrussusception.

The classification and relationships of the various neoplasms of the lymphoid tissues are beyond the scope of this paper. For that reason, the term "lymphoma" has been used throughout. This is an all-embracing term that includes all of the malignant neoplasms of lymphoid origin. The definition of lymphoma by Gall and Mallory[6] "...a tumor of mesenchymal origin in which the cells tend to differentiate into cells of the lymphocytic series..." is widely accepted. The group may be further sub-divided on the basis of cytology. Four subgroups are generally recognized: (1) small round cell; (2) large or reticulum cell; (3) Hodgkin's lymphoma; (4) giant follicular lymphoma.[5]

The prognosis of lymphoma of the bowel is guarded. At operation, if only a solitary growth is found, there is no way to differentiate between local and beginning generalized lymphoma. Not infrequently regional metastasis, not evident at operation, follows removal of the tumor.

The treatment of lymphoma of the gastro-intestinal tract is surgical excision followed by x-ray surgery. However, sufficient time must be allowed for good healing of the suture line before radiation is begun.

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RENAL HEMANGIOMATA*

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Case I

About fifteen years ago a young man, 20 years of age, came to my office for treatment of an acute specific urethritis. During the course of treatment a small "blood tumor" was discovered on the glans penis, and its removal affected by electrocoagulation. Nine years later he returned with gross hematuria. Hospitalization was advised but refused. Within the year, he requested hospitalization, and cystoscopy traced the bleeding to the left kidney. With the previous history of angioma of the skin and intermittent hematuria, a diagnosis of renal hemangioma was made. Left nephrectomy followed on 2-13-41.

Specimen of kidney measured 10x6.5x3.5 cm., and showed slight fetal lobulation. One pole showed dark serosa and an aberrant vessel was attached to this pole, 2 cm. from the mid-portion of the hilum. Near the opposite pole, a wedged shaped, pale infarct, measuring 3.5x3.5 cm. was present. Section showed, at the apex of the infarcted area, a finely, honeycombed, hemorrhagic structure which connected with the calyx. The opposite pole showed deeply congested structure. On microscopic examination sections from the honeycombed, cystic tissue showed dilated, blood-filled spaces separated by narrow, fibrous bands, and lined by flattened endotheliel cells. In addition to the hemangioma the surrounding tissue showed evidence of glomerulonephritis and congestion.

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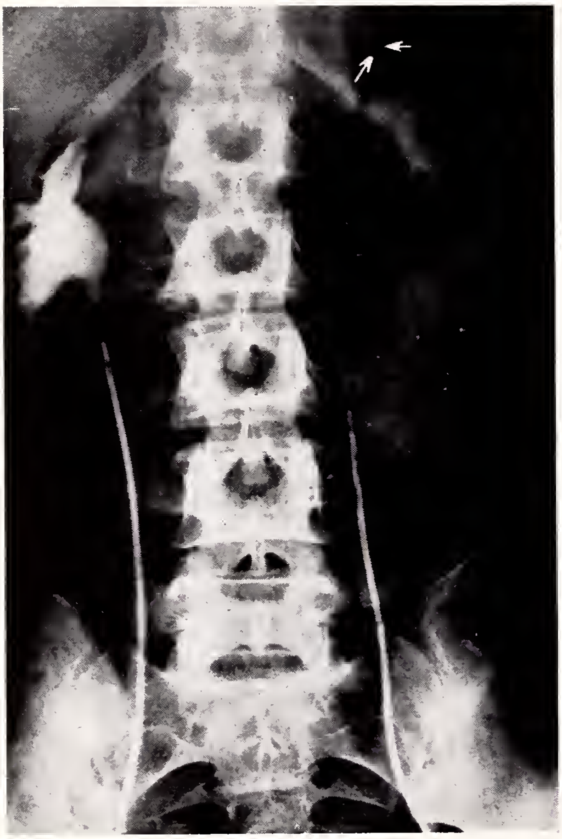
* From the Department of Urology, Delaware Hospital.

CASE II

A married woman, 39 years of age, was referred with gross hematuria and ureteral colic of four days' duration. Bilateral retrograde pyelography revealed normal filling of the right renal pelvis, and the left showed narrowing of the superior major calyx with some displacement medially. This finding suggested renal tumor.



Case II — Fig. 1

At operation a normal appearing kidney was removed.

The kidney measured 11x6.2x4.3 cm. The attached ureter showed normal diameter and measured 5 cm. in length. Ureteral mucosa normal. Pelvic mucosa showed a submucosal hematoma which measured 2x1 cm. Gross section showed a portion of this hematoma to consist of hemorrhage along the pelvic mucosa measuring 1 mm. in thickness. Distal to the hematoma, the renal parenchyma showed interstitial hemorrhage over an area approximately 1 cm. in diameter, associated with a finely cystic structure of the tissue. The microscopic examination showed cavernous spaces containing thrombic and free blood. The renal pelvis showed the hemorrhage to have elevated the mucosal epithelium.

DISCUSSION

Dorman and Fowler in the *Journal of Urology,* April, 1946, state that about 51 clinical cases of renal angiomata have been reported in the literature to date. Both the general practitioner and urologist see cases where the cause of hematuria is obscure. Consequently some of these cases are likely to turn out as angiomata of the kidney. When other possibilities are largely excluded, such as stone, tuberculosis, urinary tract infection, typical tumor pyelogram, then hemangioma seems a most likely diagnosis, particularly if the patient is under 45 years of age. Glomerular nephritis may complicate the picture. A renal infarct is less likely to do so, and usually occurs in a later decade. The presence of skin angiomata may have great significance in the presence of intermittent hematuria and has led us to a preoperative diagnosis in Case I .

Dean and McCarthy in the Transactions of the American Association Genito-Urinary Surgeons, Volume 33, 1940, made a preoperative diagnosis of renal hemangioma in a patient exhibiting multiple hemangiomata of the skin. A history of recurrent hematuria (gross) over the years in an otherwise well-nourished individual under 45 years of age should suggest renal angioma.

Frank C. Hamm in the *Journal of Urology,* February, 1946, reports an interesting case of a 34-year-old infantryman, where a diagnosis of neoplasm of the left kidney was made, but because of the doubtful ability of the right kidney to support life, resection of the upper pole of the left kidney was decided upon. The resected area proved to be an angioma. This case teaches caution and conservation and the common routine of removing an entire kidney is subject to criticism where the preoperative diagnosis is somewhat confused and especially where on exposure at operation, the external appearance of the kidney is normal. Dorman and Fowler recently had the courage to open the kidney as they felt that they were most likely dealing with a benign lesion.

SUMMARY

Two cases of renal hemangiomata are reported. One of the cases displayed intermittent hematuria and skin angioma, and was diagnosed preoperatively.

In the absence of renal tuberculosis, urinary calculus, urinary tract infection and urographic evidence of typical malignant tumor, hemangioma is a most likely diagnosis, particularly in individuals under 45 years of age.

Conservatism by renal resection rather than nephrectomy is advocated in cases where the diagnosis is uncertain and especially where on exposure, the kidney appears normal.

Rh SURVEY

JOHN W. HOWARD, M. D.,*
Wilmington, Del.

Since January, 1945, the Delaware Hospital has performed 1,890 Rh typings, obtaining 11% negative. Routine examinations are performed with 85% serum and special studies utilize additional 75% and 30% serums. Antibody titrations use human, 4-0 Rh_1, and 4-0 Rh_2 indicator cells. Early anti-Rh antibodies are demonstrated by serial saline tube dilution. Late or blocking antibodies are demonstrated by replacing saline with 30% bovine albumin, following the methods of Dr. L. K. Diamond.[1]

Before August, 1945,[2] two typical cases of hemolytic anemia of the newborn were handled. The first case, Bi, had a normal delivery in 1938, followed by three typical erythroblastic stillbirths. She had received no transfusions. In January, 1945, at eight months of pregnancy, a suggestion of Rh antibody was found. Delivery was electively induced. The infant was jaundiced, edematous, had a large liver and spleen, and a total nucleated count of 55,000, with 65% nucleated red cells. The hemoglobin was 4.5 grams. Transfusions were started immediately with the mother's washed red cells and followed subsequently with type 4-0, Rh negative neutralized blood. Subsequent check by Dr. L. K. Diamond, of Boston, who has kindly re-evaluated most of our studies, revealed anti-Rh agglutinins present through a titer of 1:128. The child showed red cell regeneration and reticulocyte rise on its twentieth day, which reached 3.3% at discharge on the forty-seventh day. At the fifteenth day, over 90% of the child's blood was Rh negative in type. The child has done well and is in excellent health today.

The second case, Ru, had a normal Rh positive delivery in 1941. No history of transfusions. In April of 1945, she delivered a jaundiced baby, with 19.1 grams of hemoglobin, total nucleated count 20,100, with 15% nucleated red cells. The jaundice deepened, the spleen became palpable, and the hemoglobin dropped to 13.8 grams. The mother's serum revealed anti-Rh agglutinins 1:64, together with an anti-Rh blocking substance. Following a similar transfusion course given Case I, this child has done well.

In August of 1945, a routine titration program on Rh negative women was instituted for patients in their second pregnancies, or those who had a stigmata or previous reactions. Since that time, we have had 1,182 births at the hospital and have done 29 antibody titrations, 23 of which have proven negative.

Of the six positive titrations, two were typical hemolytic anemias.

1. E. C. represents one of the complications of elective early delivery. No history of transfusions. A premature death in 1935, a living child in 1937, an erythroblastotic in 1941, a miscarriage in 1943. Titration revealed low titer blocking agglutinins. The child was electively delivered prematurely, had slight jaundice and edema. Hemoglobin was 13 grams. The child was transfused with 80 cc. of mother's washed red cells and did well for five days, when it died of aspiration atelectasis.

2. O. P. had no history of transfusions. Had a normal Rh positive pregnancy in 1939. In 1946 a titration revealed increasing blocking antibodies reaching a point of 1:32. At birth the child, Rh positive, had a hemoglobin of 10 grams. Liver and spleen were slightly enlarged. There was slight jaundice on the third day. Transfusions of Rh negative blood were started, and at three months of age, the baby is well.

The following case presents some of the interpretive problems dealing with this subject.

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* Pathologist, Delaware Hospital.

3. R. K. had an Rh positive pregnancy in 1939, at which time she received one Rh positive transfusion. Routine check before second delivery revealed late agglutinins which remained at a level of 1:32. Because of mechanical difficulties in the first pregnancy, the child was delivered at term by Caesarian section and found to be Rh_1 and has been perfectly normal. Sensitization did not occur in this case, as predicted when the titer did not rise.

Mixed or heterozygous parentage are illustrated by Cases 4 and 5.

4. M. B. had a history of one living type 4-0, Rh_2 child in August of 1941, with no transfusions or miscarriages. Routine titration revealed presence of late agglutinins, which remained approximately stationary for two months. Normal child, type 2-A, Rh negative was born in July of 1945.

5. M. J. received one transfusion (type unknown) seven years previously. In 1912 she had a normal 4-0, Rh negative child and in 1943 she had a normal 2-A, Rh_2 child. Two stillborn infants. Routine titration revealed presence of late blockings agglutinins. Normal child, type 4-0, Rh negative was born in September of 1945.

6. L. L. is being studied currently. No transfusions, one six and a half-month miscarriage. Titration at the seventh month reveals late blocking antibodies.

The problem of diagnosis is demonstrated by the following two cases.

Mrs. H. B., age 30, was referred to us from another hospital. There had been no previous transfusions. A three-months miscarriage in June of 1943, a normal child in August of 1944, a normal child in August of 1945, who died after two days with a clinical and pathological diagnosis of icterus gravis. Slight edema and jaundice were present. The liver and spleen were not enlarged. Total nucleated count of the child was around 25,000 with 60 to 100 nucleated red cells per 100 whites. Careful check revealed the mother to be type 2-A, Rh_1, Hr positive (heterozygous). The living child, type 4-0, Rh_1, Hr positive. No demonstrable agglutinins were found in our laboratory or in Dr. Diamond's. The type of the last child is unknown, and here where there is a possibility of an Hr incompatibility, as Dr. Diamond stated, "The present negative findings do not rule out erythroblastosis on the basis of Hr incompatibility as clearly as negatives rule Rh incompatibility today."

Another type of problem that is met today with doctors and patients that are over sensitized to this problem, is represented by Mrs. S. In her first pregnancy with no history of transfusions or miscarriages, she delivered a normal, male child which became jaundiced on the fifth day. The mother was negative. The baby and father Rh positive. The child's count revealed 11.6 grams of hemoglobin on the fifth day, which dropped to 10.5 on the twelfth day when the jaundice disappeared. No demonstrable antibodies were present. The child has done well, and both the family and the doctor have been unnecessarily worried. Theoretically, it is difficult to explain the anemia on the Rh basis.

Additional Rh problems related to transfusions have been observed:

1. Patient, age 79, had had seven pregnancies, four miscarriages, and was admitted with a diagnosis of chronic myelogenous leukemia. Routine cross-matching was found incompatible and a check revealed both early and late anti-Rh agglutinins running up to 1:512. She received Rh negative transfusions without reaction. A check on four of the living children revealed three positive and one negative.

2. Our other case, M. C., represents a more serious side of the Rh problem. In 1934, at the age of 22, the patient had her spleen removed for Banti's syndrome. Between that date and November of 1945, she received a total of 25 transfusions, many of which were associated with mild to serious reactions. In November, she received another transfusion for esophageal hemorrhages of what supposedly was her own type, 4-0, Rh positive. This was followed by a chill lasting several hours, and the next day more blood was given without reaction, but the patient's serum was then found to be hemolyzed. Initial check revealed no abnormalities. 200 cc. of Rh negative blood were given with what appeared to be a mild reaction. The patient died of anuria nine days later. Post-mortem studies of the pa-

tient's blood[3] revealed late agglutinins for Rh_1 cells through 1:512, and none against Rh_2 cells. The tests were masked by a prozone throughout the earlier dilations. The second positive donor was typed as Rh_2, explaining the absence of reaction with the second donor. The explanation of the patients' type being credited as positive can only be theoretical. It is apparent that this registered a previous donor's type, and not the patient's own.

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2. Howard, J. W.: Del. St. M. J., 17: 129, July, 1945.
3. Wiener, A. S.: Personal Communication.

LEIOMYOSARCOMA OF THE STOMACH*

A Case Report

W. W. Lattomus, M. D., and
J. W. Alden, Jr., M. D.
Wilmington, Del.

Mrs. E. F., a white female, aged 47, was admitted to the hospital on 1-21-46 with a chief complaint of vomiting blood.

The patient stated that she had not been well for four years, when she first vomited blood. At that time an abdominal operation was performed. Appendectomy was done and examination of the stomach revealed a gastric ulcer. Further details of this operation were not available. During these four years she had numerous bouts of hemorrhage from the upper gastro-intestinal tract. At no time did she have any abdominal pain. There were intermittant tarry stools and occasional episodes of diarrhea. Nausea was present for only a few minutes preceeding the vomiting of blood. During the past year the patient had noticed a gradual loss of strength and appetite, and increasing nervousness.

The patient reported six previous hospital admissions with the same complaints. The treatment was repeated transfusions of whole blood and an active ulcer regime. Her most recent hospitalization was two and one-half months ago, in Florida, following two bouts of hematemesis. She was hospitalized for 10 days at this time and again treated by transfusion of whole blood. A G. I. series done at this time revealed a massive filling defect of the stomach, probably a gastric neoplasm. This was the first x-ray examination done on the patient.

Physical examination on admission revealed a well developed, well nourished white female. The findings were essentially negative, with the exception of the abdomen. There was a right rectus scar. The epigastrium was moderately tender and there was some voluntary muscle guarding but no rigidity. There was some doubt as to whether or not a mass could be felt in the epigastrium. The temperature was normal; pulse rate was 72, the blood pressure was 150/100.

The blood count (1/21/46) showed: R. B. C., 4.0; hemoglobin, 78% (12.3 gm); W. B. C., 5100; lymphs, 23%; mono., 3%; mature polys., 71%; baso., 1%; eosin., 2%.

The urinalysis (1/22/46) showed: color, turbid yellow; sp. gr., 1.018; reaction, acid; albumin, 1+; sugar, 0; acetone, 0; WBC, 5-10 HPF; micro: epithelial cells, loaded.

G. I. x-rays done on 1/22/46, (Fig. 1) were reported as follows: The stomach was greatly dilated and showed large rounded filling

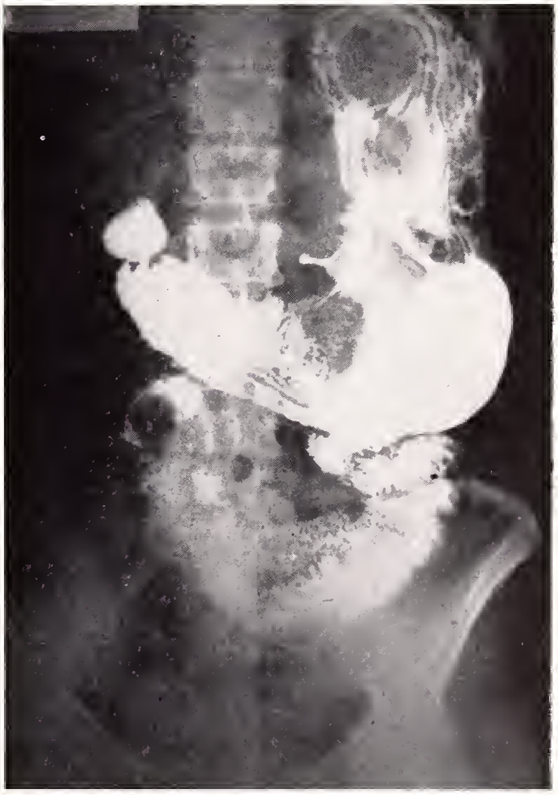

Fig 1 — Case of E. F. Barium-filled stomach, showing large defects caused by polpoid tumor.

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* From the Department of Radiology, Delaware Hospital.

defects involving the cardia and fundus of the stomach. On the radiographs these filling defects appear as soft tissue encroachment on the gastric rugae. The rugae are displaced laterally by these masses but are not interrupted. The appearance is that of a mass involving the muscularis rather than the mucosa. The duodenal cup was normal. At five hours traces of barium still remained in the stomach and the head of the meal had reached the ascending colon.

Diagnosis: There is a gross filling defect involving the stomach. Carcinoma is the most common cause for a gross lesion of this kind. Because of the past history and the x-ray appearance, large varices must be considered. This type of filling defect is that frequently seen in sarcoma of the stomach.

The patient was operated upon on 1/29/46 under continuous spinal anesthesia A midline incision was made and the stomach was palpated. The lumen was found to be entirely filled with a hard mass. Total gastrectomy was performed. The patient received 500 cc. of whole blood during the operation, which was done in 2 hours and 19 minutes. The lowest blood pressure recorded was 98/24, and the systolic pressure at the end of the operation was 104.

The pathologist's report on the surgical specimen was as follows (Fig. 2):

Gross: the specimen consists of resected stomach measuring 18 cm. along the greater curvature. The wall of the lessure curvature is completely replaced by a soft nodular tumor, measuring 20 x 10 x 4.5 cm. The mucosa over the tumor is smooth and flat. The tumor bulges into the lumen but does not appear to erode through the mucosa or serosa, but section of the tumor reveals uniform soft graywhite, friable tissue showing occasional areas of hemorrhage and necrosis.

Microscopic: shows a pattern typical of fibrosarcoma or leiomyosarcoma.

Diagnosis: Sarcoma of Stomach.

Postoperatively the patient went into profound secondary shock from which she never responded. Death occurred on the third postoperative day.

Discussion

Reported cases of sarcoma of the stomach constitute about 1 per cent of all gastric malignancies. Most authors classify them in three groups: (1) spindle cell myosarcoma (leiomyosarcoma): (2) lymphosarcoma: (3) miscellaneous round cell sarcomas. Of these approximately one third are of the spindle cell type. Leiomyosarcoma may be solid or cystic, and frequently are of large size. The tumor may be subserous, intramural, or submucosal. In the case of the latter two, the picture is that of encroachment on the lumen of the stomach while in the former the tumor distorts the stomach by drawing it out into a funnel form. The diagnosis is frequently made late in the course of the disease. Because of its location in the so-called silent area of the stomach in the cardia or fundus, the only symptom may be hemorrhage. At times a mass may be palpable. Metastases to the liver are common, and they are usually bulky and cystic. The course of the disease is relatively long, usually about 3½ years. Radiation has no place in the treatment, which should consist of partial gastric resection.

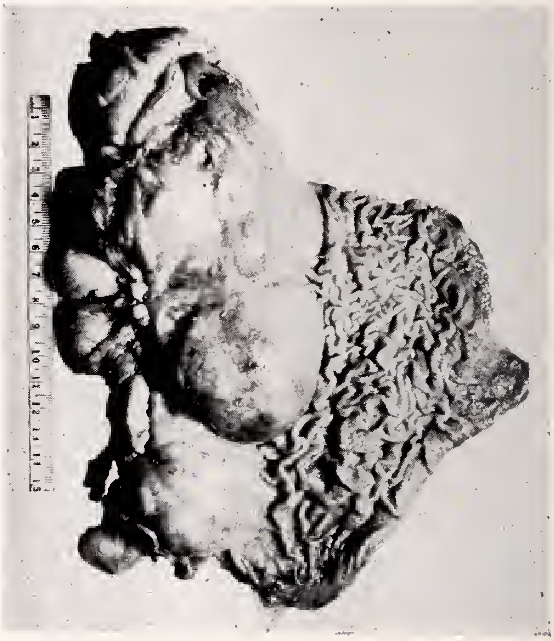

Fig. 2 — Cose of E. F. Gross pothologicol specimen.

Comment

We are presenting a case of leiomyosarcoma. It is unusual because of the infrequency of occurrence, and the similarity of the radiologic and pathologic pictures. The case also serves to illustrate the importance of thorough examination, including radiologic, of all patients presenting the symptom of hematemesis.

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REHABILITATION IN THE OBESE BY LIPECTOMY

Lawrence J. Jones, M. D., and
George J. Boines, M. D.
Wilmington, Del.

Obesity in the female can be a serious cause of incapacity. This is especially true when the abdominal wall is particularly involved, associated with an umbilical hernia. This condition is frequent in the female with the mild diabetic condition which can easily be corrected with a diet whenever followed. Dietary restrictions are important in regulating the weight of these individuals, but these measures are not sufficient to remove the pendulous abdomen which interferes with the patient's movements. Such patients are not able to stoop over, cannot take care of their feet, and obviously cannot tie their shoes. Expensive belts and garments are not only uncomfortable and unreliable, but add greatly to the burden of weight that the victim has to carry around. A circular dermolipectomy and repair of the umbilical hernia offers a means of rehabilitating such an individual. The following case is presented as a typical example.

Mrs. G. P., white female, age 39; height, 4 ft. 11 in. Was always overweight, but became obese after her two pregnancies. An umbilical hernia developed about ten years ago. She often followed special diets for the reduction of her weight and her blood sugar. She never required insulin. In 1941 her weight was 283 pounds. After a 22 day period of hospitalization, her weight was reduced to 275 pounds. On 9/20/45 she was hospitalized for lipectomy. Her weight on admission was 269 pounds; her general physical condition was satisfactory after a brief period of rest and diet regulation.

Operative Record: On 10/8/45, lipectomy and repair was performed by Dr. Jones. An incision was made, starting at the spine and traversing the abdomen to the spine on the

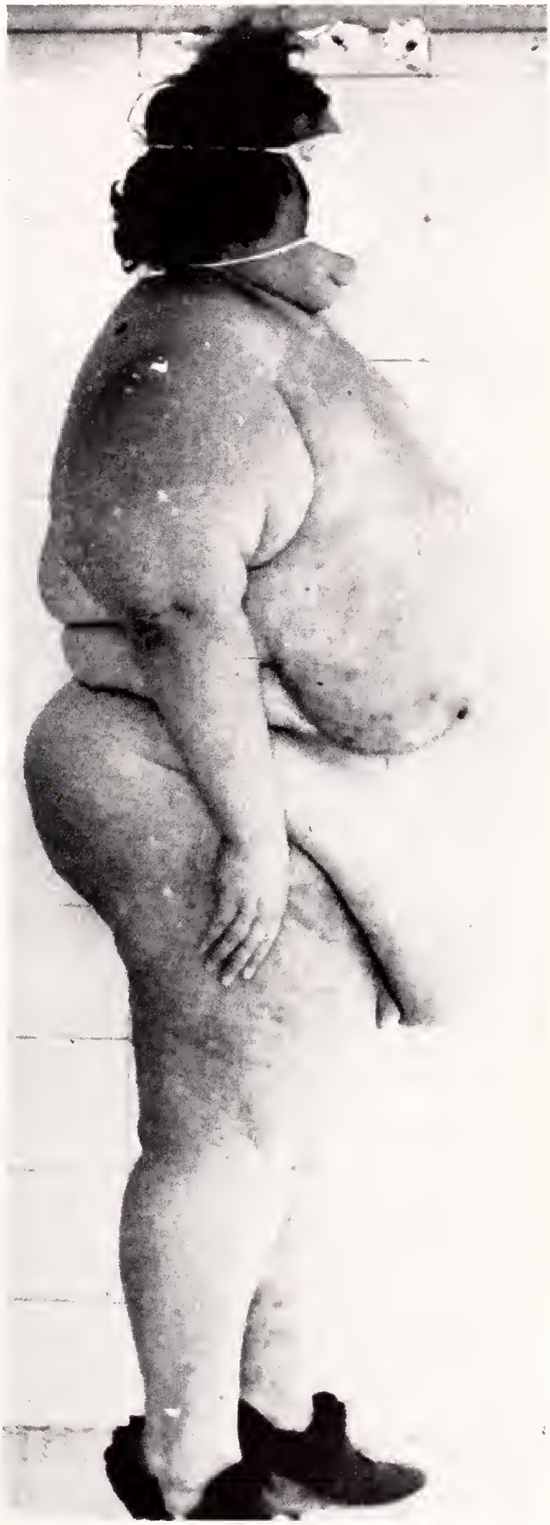

Fig. 1 — 1941, weight 283 pounds. Umbilical hernia.

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* From the Department of Surgeary, Delaware Hospital.

other side; a similar incision was made about twelve to fourteen inches lower down and a block of skin, fat tissue and umbilical hernia the shape of a section of an orange was removed. Its weight was thirty-one pounds. The incision was then closed after correcting the hernia.

The patient made an uneventful recovery and was discharged from the hospital on 10/24/45 in good condition. Her weight on discharge was 229 pounds. Within a few weeks she reduced her weight to 212 pounds. She then returned to work and had no difficulty or discomfort in performing her household and many other new duties which she had not been able to do because of the intervening adiposity.

NATIONAL HEALTH BILL DIES

Commenting editorially on the report that efforts to obtain enactment of the national Health bill at this session of Congress have been abandoned by the Senate Committee on Education and Labor, the July 20 issue of *The Journal of the American Medical Association* says:

However, proponents of the bill assert that it will be introduced at the next Congress when it convenes in January. According to unnamed "persons close to the program," the "Wagner-Murray-Dingell bill was loaded with too much controversy for its sponsors to expect it to reach a voting stage before the election year adjournment begins." This statement from the New York Times should be pleasing to the medical profession of the United States, the vast majority of whom have indicated again and again their opposition to the kind of regimentation of medicine embodied in the Wagner-Murray-Dingell legislation. Incidentally, the New York Times says that among the witnesses asked not to appear at the hearings on the bill were representatives of organizations vigorously opposed to the legislation.

As we go to press, the following announcement has also just come from the Committee on Education and Labor:

The Education and Labor Committee voted to instruct Senators Pepper and Taft to draw up a resolution embodying the recommendations of the Committee relative to child health. These recommendations would express the sense of the Committee that a total increase of $31,500,000 for child welfare authorizations should be provided. On July 15 Senators Pepper and Taft introduced Senate Joint Resolution No. 177, amending title 5 of the Social Security Act, to provide for increasing grants to the states for crippled children, maternal and child health and child welfare.

This resolution will go now to the finance committee of the Senate for consideration and then to the appropriations committee of the House for its consideration. In case of favorable action, which at this time seems doubtful, the administration of these additional funds will be under the same regulations and controls as previous appropriations for the Children's Bureau.

By action of the United States Senate, President Truman's reorganization plan becomes effective so that the Children's Bureau will be transferred from the Department of Labor to the Federal Security Agency, where its activities will be coordinated with those of the United States Public Health Service and other governmental agencies having similar functions.

Whatever success has been thus far achieved in controlling tuberculosis is a direct contribution of organized medicine to the welfare of the human race. Critical and querulous comment is rather too commonly heard, charging the medical profession with dereliction of its duty in not suspecting and therefore discovering tuberculosis in its earliest or minimal stage. This criticism is largely unfair, since it is only through the X-ray that the disease can be discovered thus early. Although the X-ray has been in use for a good many years, facilities for its adequate application have only recently been generally distributed. From now on it will take the place it deserves as our outstanding diagnostic medium and be used without limitation by internists everywhere.—Kendall Emerson, M. D. *Hoosier Health Herald,* February, 1946.

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Delegates: *Jos. McDaniel*, Dover; H. W. Smith, Harrington.

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Alternates: L. M. Dobson, C. M. Moyer, E. L. Stambangh, G. W. M. Van Valkenburgh.

Censors: O. A. James, R. C. Beebe, A. C. Smoot.

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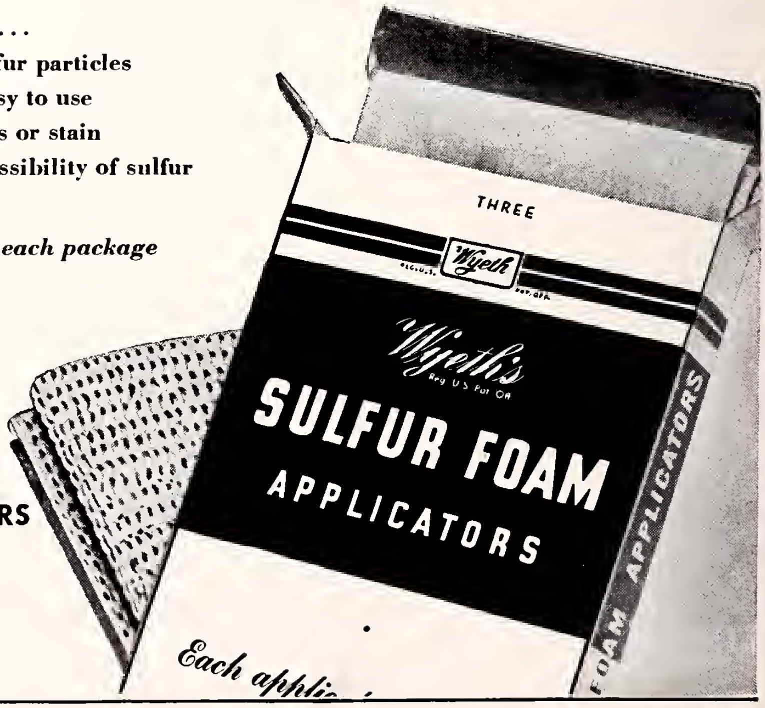

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M. A. Tarumianz, M. D. .... Assoc. & Managing Editor
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Vol. 18 July, 1946 No. 7

Indefensible

The action of the Wilmington City Council on June 27th, which raised the annual medical license fee from $10 to $50, has caused a festering sore in the medical profession that will require a lot of political penicillin to cure. The action is indefensible. With a balance of $920,000 in the city treasury, no justification has yet appeared for *any* increase in the business or professional licenses, yet the budgeteers hiked the total to more than double the amount ever assessed before.

No hearings were held. In the press of June 26th came the news that the hike was on and that the voting would come on the 27th. Even so, the President of the New Castle County Medical Society and two members of its Legislative Committee were on hand to protest, but the deal went through according to Hoyle.

The new fees are supposed to be on "an equitable basis." The doctors would not feel so incensed if they really were. The doctor's practice, according to clientele, specialty, etc., involves fifteen to thirty per cent charity work. So, for doing the indispensable medical charity work of the community the medical license fee is multiplied by five. What an unspeakably ungrateful community this has turned out to be! Never before, in the tax history of this city, has such an unconscionable grab been perpetrated. The young medic just back from facing bullets, grubbing along for another start, disgustedly says he'd rather be facing bullets than facing ballots like these. And we used to wonder why and how cynics were made!

This $50 license is not effective till June, 1947. We have more than a hunch that some of the members of Council even now aren't any too happy about the whole affair. The proper and reasonable thing now is for Council, who upped the fees all too hurriedly, to repeal or revise than more leisurely, and more equitably. The Legislative Committee of the New Castle County Medical Society should immediately petition that this be done.

BOOK REVIEWS

Electrocardiography in Practice. By Ashton Graybiel, M. D., Captain, Medical Corps, U. S. Naval School of Aviation Medicine, Pensacola, Florida; and Paul D. White, M. D., Lecturer in Medicine, Harvard Medical School; with the assistance of Louise Wheeler, A. M., Executive Secretary, the Cardiac Laboratory, Massachusetts General Hospital; Conger Williams, M. D., Assistant in Medicine, Harvard Medical School Hospital. Second Edition. Pp. 458, with 323 illustrations. Cloth. Price $7.00. Philadelphia: W. B. Saunders Company, 1946.

While the general purpose and plan remains unchanged, several significant additions and changes have been made in the second edition of this well known work on electrocardiography. An excellent section on precardial leads has been added, together with their variations in health and disease. The electrocardiographic findings in several conditions are described which were not available for the original edition. The method of case presentation has been slightly altered, the interpretation of the electrocardiogram being given first. This is followed by the clinical findings and then a comment concerning the correlation of the two. The case histories are more complete, and four tables have been added which greatly enhance the value of the book. The arrangement and indexing of the material have also been greatly improved. The paper is, of course, inferior to the first edition, though the publishers are to be congratulated upon the relatively excellent quality of the work. The book is highly recommended to all who are interested in the clinical application of electrocardiography.

Principles of Dynamic Psychiatry. By Jules H. Masserman, M. D., Division of Psychiatry, University of Chicago. Pp. 322, with 4 plates. Cloth. Price, $4.00. Philadelphia: W. B. Saunders Company, 1946.

This little book provides an adequate introduction to the principles of modern dynamic psychiatry, outlines their application to the techniques of clinical diagnoses, and demonstrates the methods of therapy.

This book will have a wide circulation and will serve a most useful purpose in spreading among the young psychiatrists, psychologists, and psychiatric social workers the importance of an understanding of the principles of dynamic psychiatry.

Diseases of the Skin—For Practitioners and Students. By George Clinton Andrews, M. D., Associate Clinical Professor of Dermatology, Columbia University. Third edition. Pp. 937, with 971 illustrations. Cloth. Price, $10.00. Philadelphia: W. B. Saunders Company, 1946.

With the advent of the sulfa drugs, penicillin, streptomycin, contact therapy machines, etc., advances in dermatologic therapy have been made by leaps and bounds. Andrews has summarized all these advances and incorporated them in this new edition, the first in eight years. Every page has been rewritten The chapters on Roentgen-ray Therapy, Radium Therapy, and Roentgen-ray Physics are most helpful. The illustrations are on the crisp side—somewhat of a virtue. There is an excellent index. This is a book we recommend most heartily.

Pneumoperitoneum Treatment. By Andrew Ladislaus Banyai, M. D., Associate Clinical Professor of Medicine, Marquette University. Pp. 376, with 74 illustrations. Cloth. Price, $6.50. St. Louis: C. V. Mosby & Company, 1946.

Beginning with the treatment of tuberculous peritonitis fifty years ago, pneumoperitoneum had small recognition till the last 10 to 15 years, since which time it has been applied to the treatment of emphysema, bronchial asthma, and pulmonary abscess, hemorrhage and tuberculosis, postoperative adhesions, ulcerative colitis, intestinal hemorrhage, vomiting of pregnancy, etc., with some very encouraging results. Banyai's book covers these various fields of therapy completely, following several chapters on basic principles. No attempt is made to cover the diagnostic use of pneumoperitoneum. The illustrations are excellent, but for the sake of completeness should include the apparatus used and the actual techniques. These are well described in the text, but nothing talks better or clearer than a good picture. Concluding with an excellent bibliography, this well-documented monograph merits wide acceptance.

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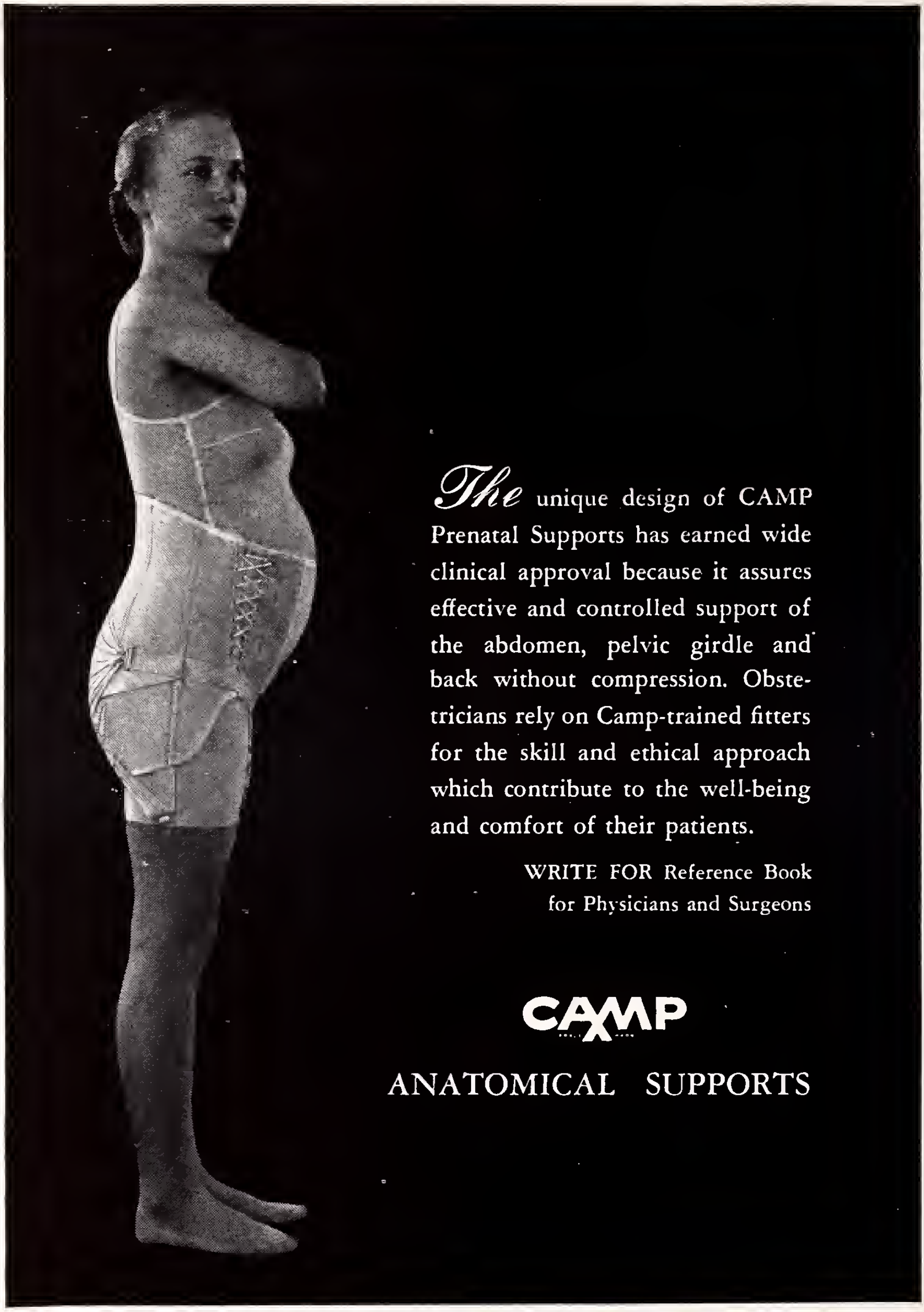

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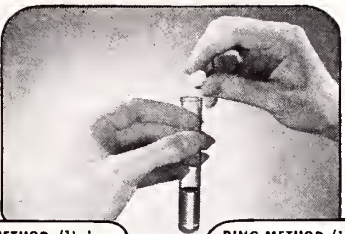

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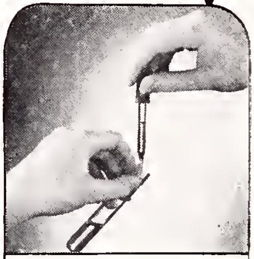

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32, 241; N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.*

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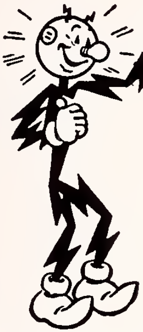

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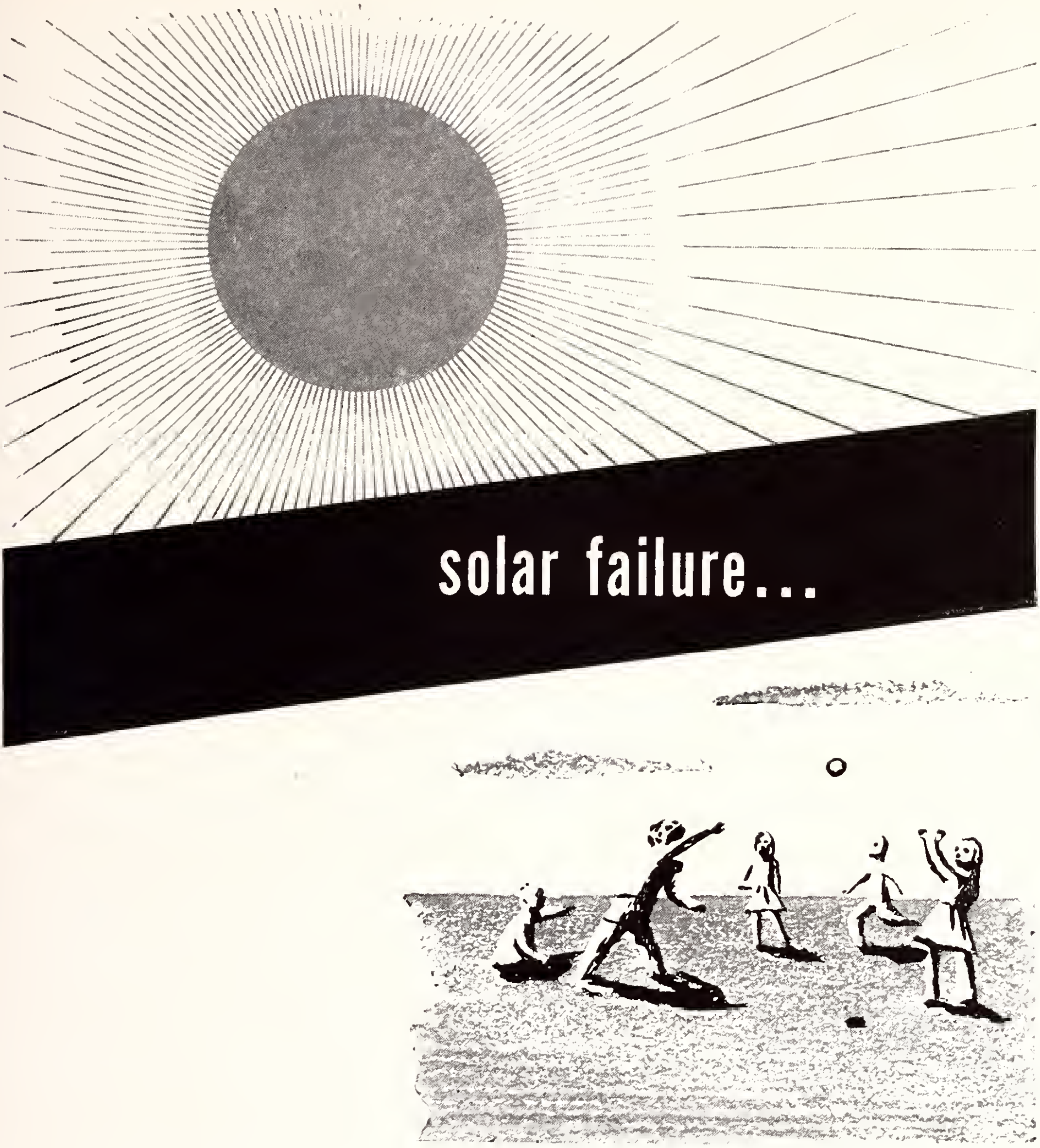
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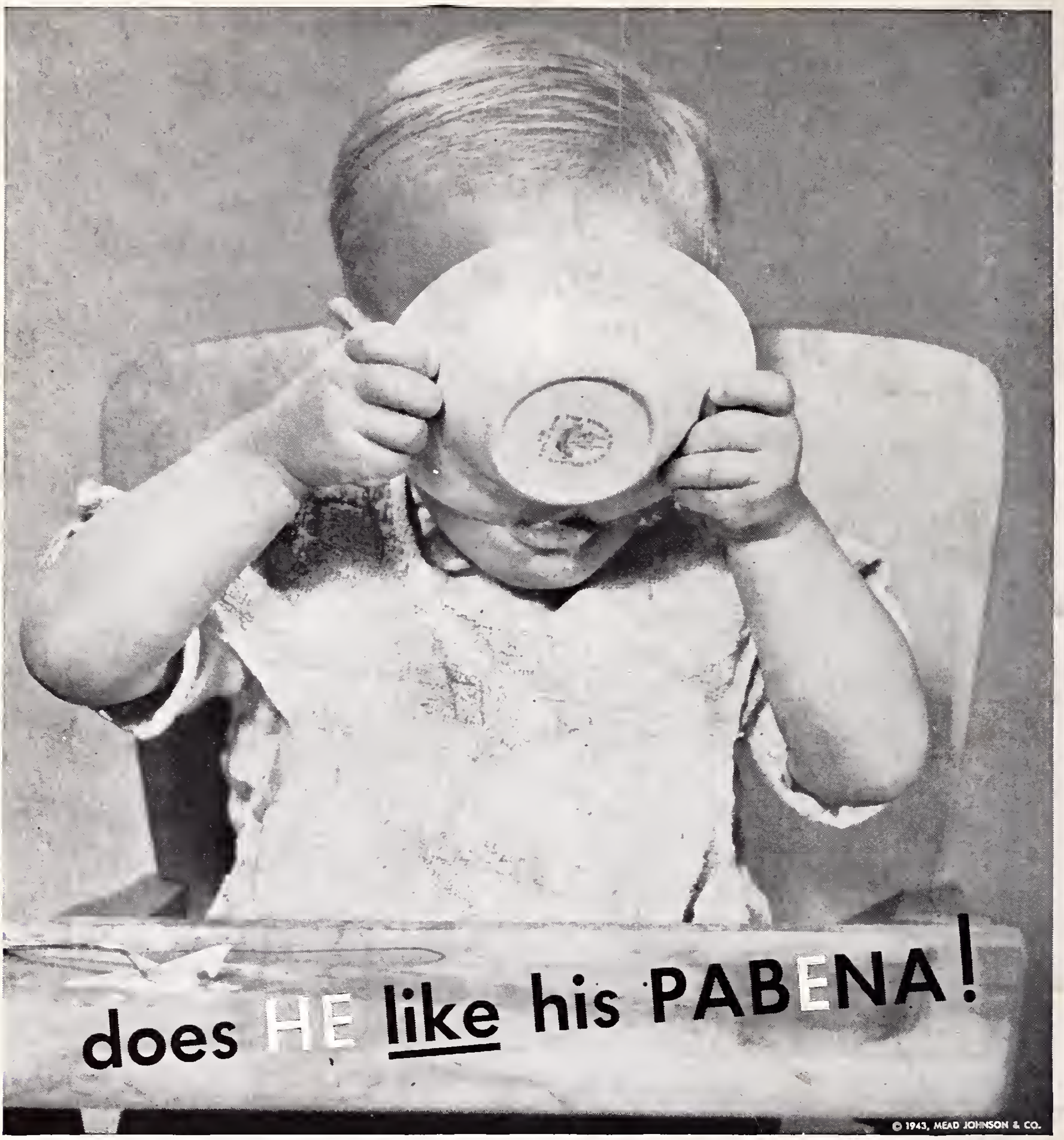
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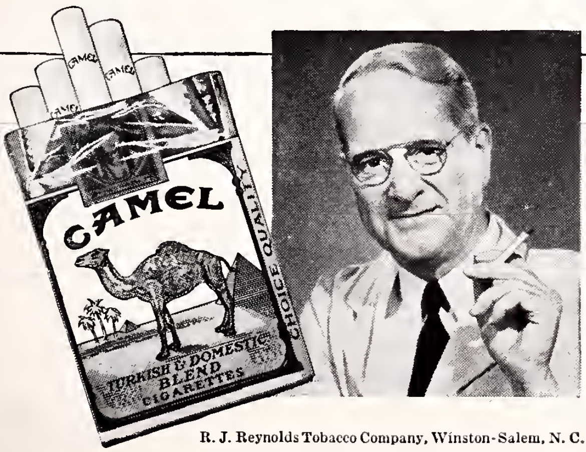

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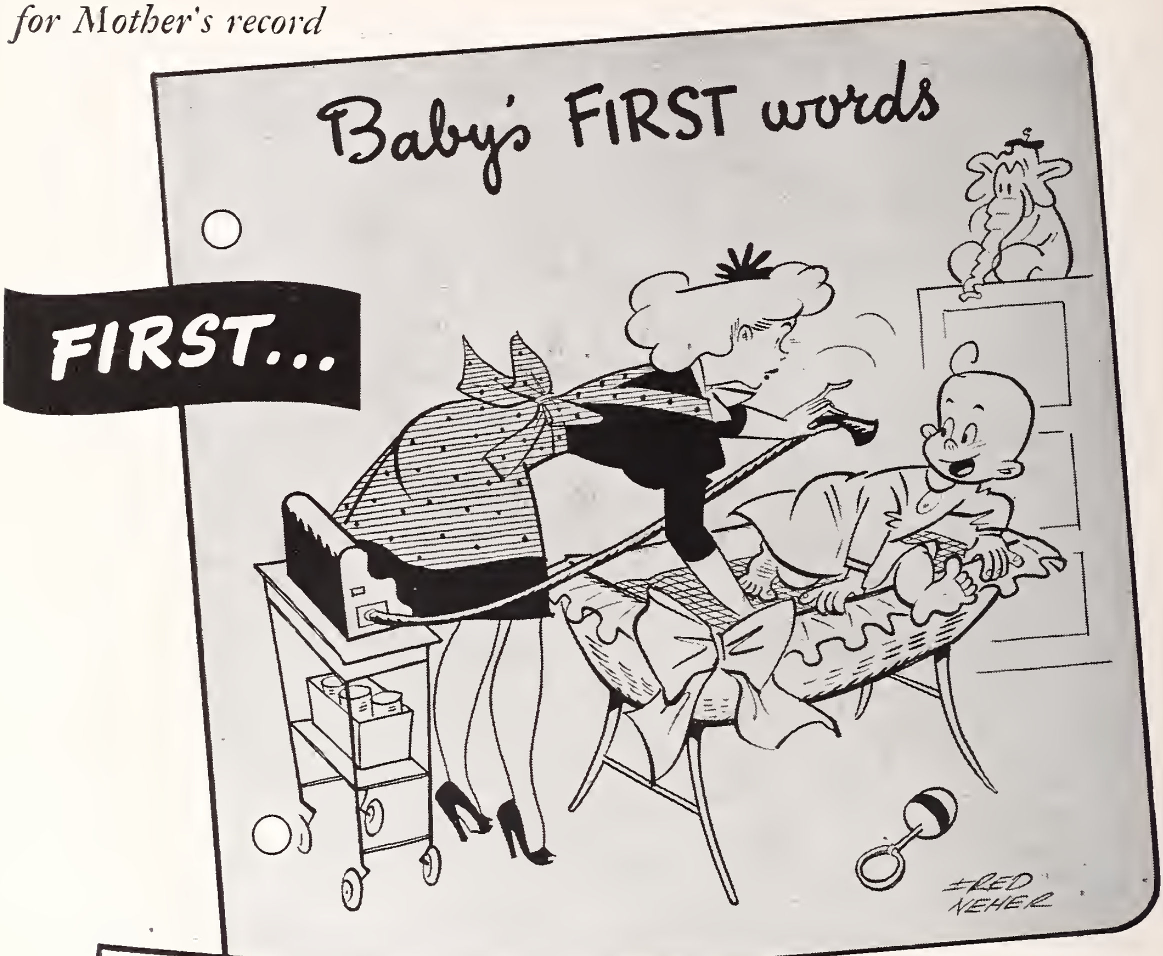

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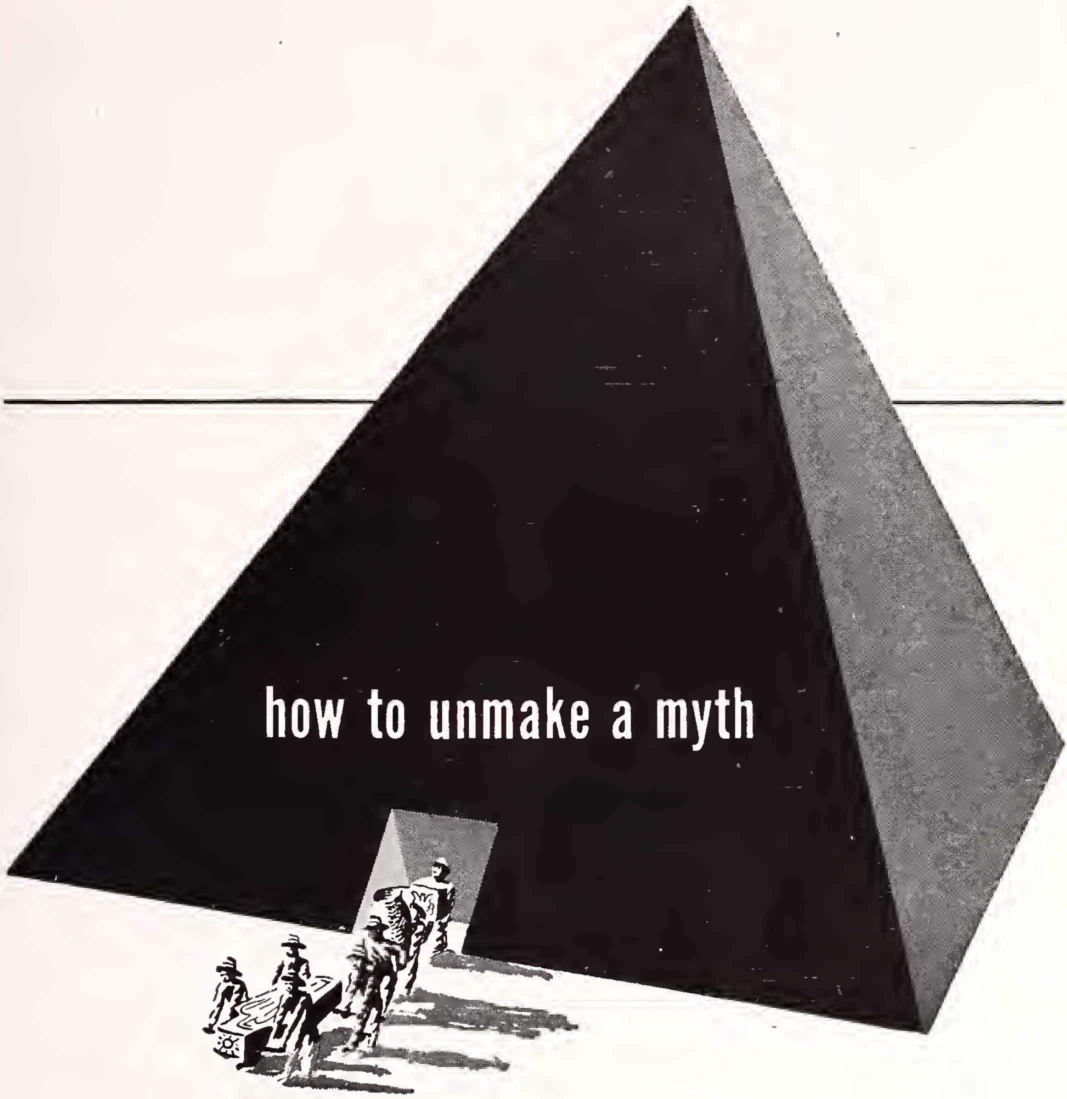
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*Cahill, W M, Schroeder, L J and Smith, A H Digestibility and biological value of soybean protein in whole soybeans, soybean flour, and soybean milk, J Nutrition, 28.209, Sept 1944.

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Richards, R. K., and Perlstein, M. A. (1945), Tridione, A New Experimental Drug for the Treatment of Convulsive and Related Disorders. Proc. Chicago Neurological Soc., Jan. 9; and (1946), Arch. Neurol. and Psychiatry, 55:164 February.

Lennox, W. G. (1945) Petit Mal Epilepsies: Their Treatment with Tridione, J. Amer. Med. Assn., 129:1069 December 15.

DeJong, R. N. (1946) Effect of Tridione in the Control of Psychomotor Attacks, J. Amer. Med. Assn., 130:565 March 2

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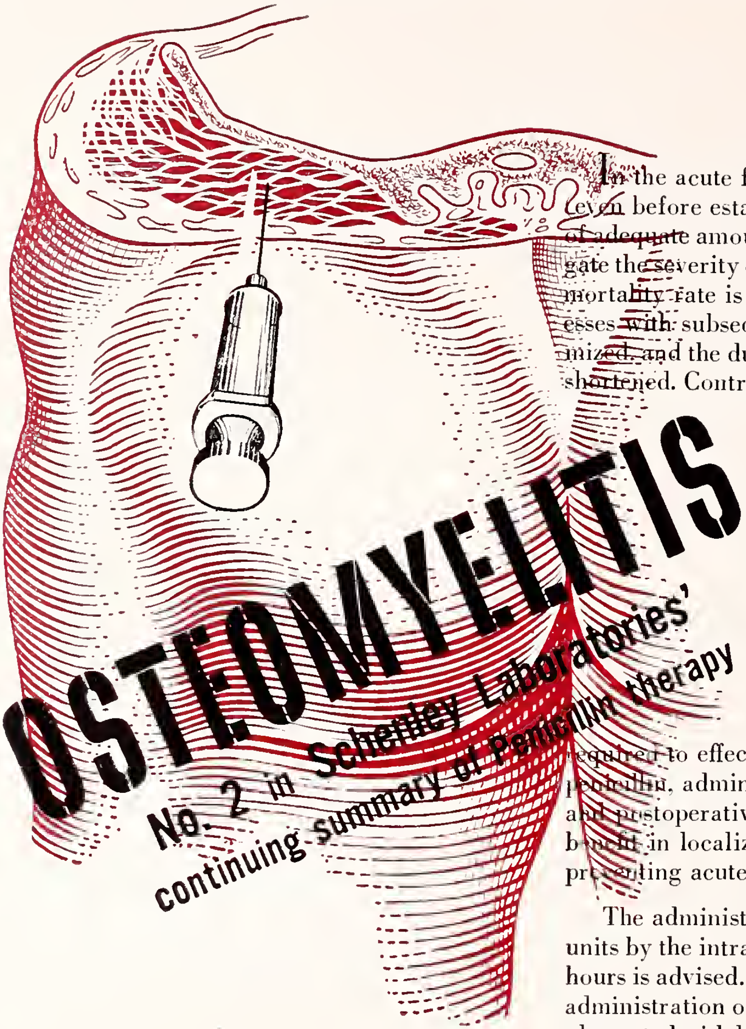

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To determine complete control and eradication of the infection, a prolonged follow-up period with frequent physical examinations and serial roentgenograms is advised.

KEEFER, C. S. *Penicillin—Its Present Status in the Treatment of Infections: The Nathan Hatfield Lecture XXIX, Am. J. Med. Sc. 210:147 (Aug.) 1945.*

ALTEMEIER, W. A.: *Treatment of Acute Hematogenous Osteomyelitis with Penicillin, Ohio State M. J. 42:489 (May) 1946.*

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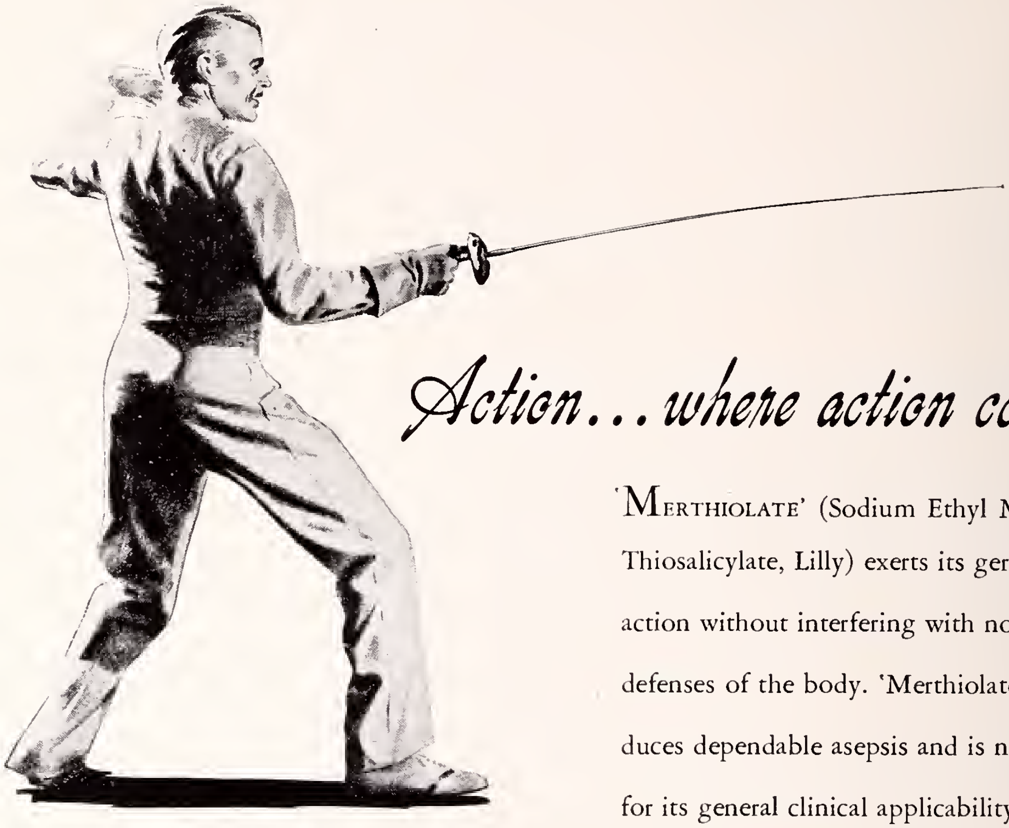

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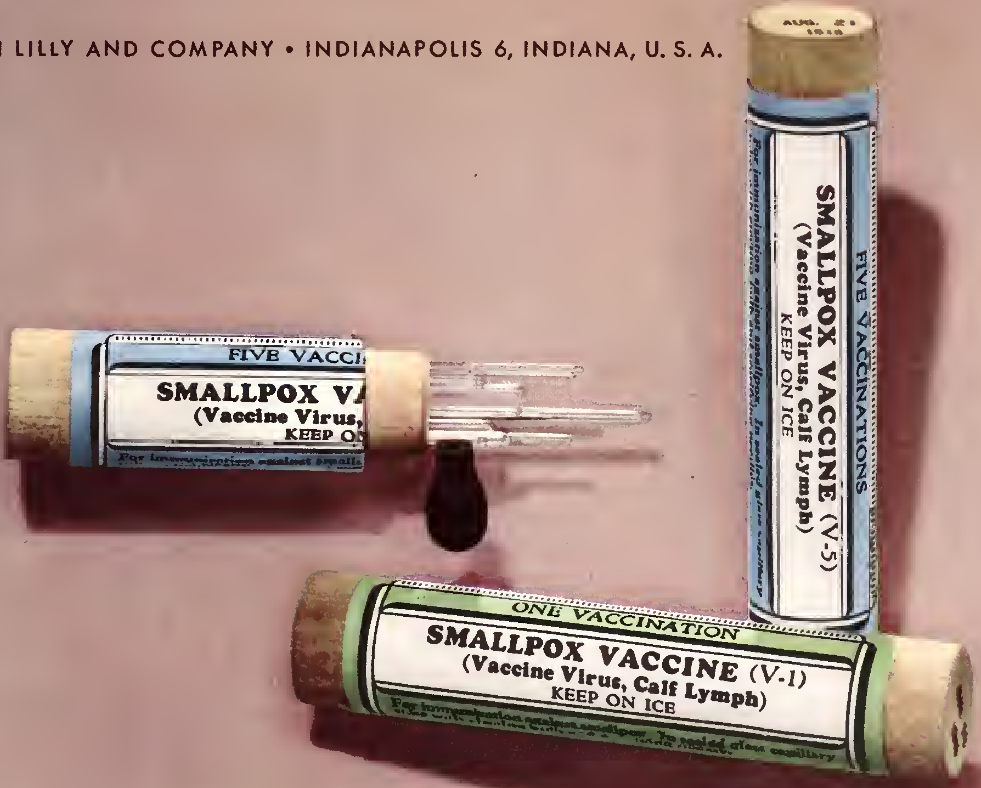

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TIRED AND WORN by the demands of the busy day, the average physician would much prefer home and family to an evening meeting of his medical society. He would like nothing better than a few hours of complete rest and relaxation. Medical progress, however, demands that he be ever alert. Or if he happens upon an experience which may be helpful to others, he willingly shares it. Advancement in medical practice must be common knowledge in order that people in general may benefit.

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AUGUST, 1946

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THE TREATMENT OF POLIOMYELITIS UNDER ORTHODOX, KENNY, AND PROSTIGMINE METHODS

George J. Boines, M. D.,*
Wilmington, Del.

Over a period of fifteen years we have seen poliomyelitis treated by a variety of methods and in many cases by no method at all. The results were always expected to be poor and patients were expected to spend many months or years in institutions for the crippled. The so-called "orthodox" method of immobilization on a Bradford frame, in casts, splints and braces was considered the best method of resting the "damaged anterior horn cells" that were supposedly destroyed. Corrective operations after two years of the above treatment were anticipated and carried out in many cases. In 1937, the Retan method of perivascular drainage was tried in our clinic with some improvement which was not sufficient in paralytic cases to be able to ascribe it to the method or to the natural course of the disease. This method required a great deal of work and observation, and its dangers did not justify its use.

In October, 1941, we became interested in the Kenny Concept of infantile paralysis and in the treatments as outlined by Miss Elizabeth Kenny in Minneapolis and later in Wilmington. As stated before[1], with the Kenny method of treatment we noticed unusual improvement: no deformities, no stiff joints, no contractures, early convalescence, happy patients, and what also is very important, happy families who were able to take their patients home after a comparatively short period of hospitalization.

Kabat and Knapp[2] reported on the action of prostigmine on subacute and chronic poliomyelitis patients who were also receiving hot packs. Their results were very encouraging. It was noted that the drug had the ability to relax muscle spasm and improve incoordination and alienation in the subacute and chronic cases who did not respond to the hot packs alone. Inspired by this work, we decided to use prostigmine without hot packs on acute, subacute and chronic cases. This work was reported in a previous communication.[3] We showed that this parasympathicomimetic drug could be used as a substitute for the hot packs, and that additional and substantial relaxation of muscle spasm was obtained in chronic patients who had formerly received the Kenny hot packs over a period of many weeks. It was also noted that patients who had been formerly treated by other methods over a period of years made spectacular improvement with prostigmine. Kenny muscle reeducation was used in all the patients.

We now present the results of the treatment of 157 cases of acute poliomyelitis treated in the five-year period of 1941 to 1945, inclusive. All of these patients were admitted and treated in the Doris Memorial Unit of the Wilmington General Hospital. The 1941 group was treated by the orthodox method, the 1942 by using the Kenny packs, in 1943 the packs were omitted and prostigmine was used, and the 1944 and 1945 patients were treated by hot packs and prostigmine simultaneously.

On admission each patient became an individual problem. The diagnosis was carefully established and the muscles involved outlined. Angle measurements of the various joints were made so that their degree of relaxation could be measured. The frequency of hot packs was varied according to the severity of the disease and the parts involved. Where chest muscles were involved, the foments were changed as often as every ten minutes, and as relaxation of the muscles progressed the time was gradually extended to two hours. The neck and back usually required prolonged packing. Stimulation was done daily and passive movements were not begun until all spasm and pain disappeared. In time patients were allowed to sit up, then get out of bed and walk. Packs and prostigmine were discontinued as soon as all evidence of spasm disappeared and coordination of muscles was established. All patients were sent home as soon as they were able to walk on their power or with aids, and they returned to the out-patient clinic for additional muscle reeducation and observation. All patients were checked frequently by the physician to be sure that spasm did not return. It was a common experience to see a slight scoliosis beginning, an elevated shoulder, spasm in the gastrocnemius or in other muscle groups make its appearance after overexertion. These were easily corrected with proper measures.

---

* Physician in charge, Kenny Clinic, Doris Memorial Unit, Wilmington General Hospital.

The nursing care was that outlined by Sister Kenny.[4] Patients were kept between blankets, high caloric diets were given, and to some patients vitamins such as cod liver oil and ascorbic acid were given. The muscle reeducation was done by trained physiotherapists who spent several months in Minneapolis under Sister Kenny. The patient and technician were always alone in the treatment room, thus enabling the patient to concentrate on the movements of the muscles.

No immobilization of any kind was employed. Some have contended that the fracture board under the mattress and the foot board are in effect another form of immobilization. This is not true. After all, the patient has to be in bed. He is not restricted in his movements and the foot board is not used in the acute stage when there is active spasm in the gastrocnemii. The foot board is used later to keep the soles of the feet in contact with a firm surface in order to preserve as much as possible the proprioceptive sense of the standing reflex. After the patient is walking the foot board is not used. At other times, we use the foot board for stretching the gastrocnemii by having the patient keep his feet flat against the board, using force when necessary. Keeping the mattress away from the foot board gives a space for the heels and for the feet when the patient is lying in the supine or prone position. The position is changed frequently in order to keep him comfortable and to help to relax involved muscles. An effort is made to keep the patient in a straight "standing" position in bed. This is difficult to do in young children and nothing is done to force them. At times we used rolled towels or small sand bags on the sides of the legs to assist patients in keeping in good alignment. Naturally, when hot packs were used, they acted as a means of keeping the patient in the proper position. Every time the foments were changed the joints were moved passively, depending always on the condition of the individual case. Nurses were taught to handle the patients very carefully so that no muscles were stretched or injured.

Oxygen was used frequently by face mask or nasally in severely affected patients, especially the bulbar type. Intravenous fluids and other medications were employed according to the condition of the patient. All patients with bulbar paralysis were placed in bed with the head lowered, aspiration of mouth and throat fluids was taken care of by the nurse, and the position of the patient was changed to the prone or supine position, according to the individual case. Usually, ability to swallow gradually returned in 7-10 days. Fluids were supplied parenterally, giving the necessary calories in glucose and amino-acids or plasma. In one case, a female, aged 30, it was necessary to do a gastrostomy on the twenty-first day of the disease because of difficulty in swallowing. This patient was fed through the tube for about three weeks and gradually returned to oral feedings and the gastrostomy was allowed to close.

The patients reported in the tables to follow have been recently checked by the technicians and the physician, and frequent orthopedic consultations have been made.

Prostigmine* bromide by mouth and prostigmine methylsulphate hypodermically has been used very extensively and in many neuromuscular dysfunctions. It is not within our province here to discuss its theoretical actions in the central nervous system. Its action in the myoneural junction has been well proven by its spectacular action in reviving within a few minutes the generalized muscle weakness of the myasthenia gravis patient. Table I outlines the dosages used in our series.

---

* The prostigmine used in this study was kindly supplied by Hoffman-La Roche Co., Nutley, N. J.

TABLE I. Prostigmine Dosage Schedule Per 24 Hours

	Tablets—15 Mgs.	Ampules—1:2,000
½ to 2 years of age.........	2 to 3	1½ to 3
3 to 5 years of age.........	3 to 8	1 to 4
6 to 10 years of age.........	4 to 9	3 to 6
11 to 15 years of age.........	6 to 12	4 to 8
16 to 21 years of age.........	8 to 12	4 to 16
21 years of age and over	3 to 8	6 to 12

The dosage depends entirely on the amount of muscle spasm present on admission. In mild cases the tablets are sufficient to produce relaxation, in moderate cases the smaller schedule of ampules alone is sufficient. In severe cases the high dosage of ampules is started, and as the relaxation approaches the moderate stage the dosage is reduced to the smaller schedule. Where the patient objects to the hypodermic injections or where relaxation is occurring steadily, we change over to the tablets, the smaller or higher dosage according to the degree of spasm present.

In general, children stand the prostigmine very well with very little discomfort. If abdominal cramps are severe a small dose of atropine by mouth (gr. 1/150 if 7 years of age and 1/200 in younger patients) usually brings relief. Male and female children tolerate the drug alike.

Adult patients, especially those over 21 years of age, do not tolerate the tablets as well —they complain of nausea, severe abdominal cramps, and tenesmus. The same is true of the ampules in a smaller percentage of such adults. In some cases an adult will tolerate 3 to 6 ampules, given one every 4 hours, but he cannot take more than one tablet daily without nausea, vomiting, and a feeling of extreme nervousness. Pregnancy in a patient is no contraindication to the drug (Case 52: female, aged 16, in sixth month of pregnancy, had 146 tablets, went to a normal termination.)

In all patients it is wise to start with a small dose at first and note any reaction for the first two days; if there is none, one proceeds with the larger doses. In small children a large initial injection may cause a feeling of fainting with pallor and cold clammy skin. This condition rapidly improves, however, without the administration of any stimulants.

The number of patients treated in each of the five years, and their type of paralysis is illustrated in Table II. This comprises practically all patients with poliomyelitis reported in the state of Delaware, since the Doris Memorial Unit is the only communicable disease hospital in the state. The few patients who were not treated at this clinic in 1944 were either light or expired before the diagnosis was made. It will be noted that 130, or 83 per cent, were under the age of 14, and that 60 per cent were males. The youngest was 10 months and the oldest 42 years of age. 42.5% of all patients were non-paralytic. The number of non-paralytics was higher in 1942—10 out of 16. This should be kept in mind when one compares the results.

TABLE II. Poliomyelitis Patients, 1941-1945

Years	1941	1942	1943	1944	1945	Totals
No. of Patients	19	16	5	88	29	157
Male	13	11	4	48	16	92
Female	6	5	1	40	13	65
1- 7 Years of Age	8	8	2	42	14	74
8-14 Years of Age	7	7	3	31	8	56
15-21 Years of Age	3	0	0	9	3	15
22-42 Years of Age	1	1	0	6	4	12
Non-paralytic	9	10	1	33	14	67
Paralytic Spinal....	9	4	4	39	13	69
Paralytic Bulbar	1	2	0	16	2	21

Table III outlines the anatomical regions paralyzed. There was actual paralysis of 24 upper extremities. All of these were treated without any type of splint at any time; the results were superior to the former splint methods. This was shown by the absence of ankylosis of joints, or of deformities, and by good return in muscle function. The 19 patients with paralyzed sternomastoid muscles all had bulbar paralysis; many of these have thinner muscles on the involved side but none have any functional disability. All of the patients with swallowing paralysis have returned to normal. Seven of the expired group had bulbar or respiratory paralysis; the eighth had endocarditis and pericarditis.

TABLE III. Muscles Involved in 90 Patients with Spinal (69) or Bulbar (21) Paralysis at the onset.

Years	1941	1942	1943	1944	1945	Totals
No. of Patients	10	6	4	55	15	90
Upper Extremity	3	4	3	11	3	24
Lower Extremity	8	6	4	48	11	77
Face	0	0	0	4	0	4
Sternomastoid	0	2	0	16	1	19
Speech	0	2	0	6	1	9
Swallowing	0	2	0	10	1	13
Abdominal	0	1	1	6	2	10
Respiratory (Expired)	1	0	0	4	3	8

Table IV shows the influence of the type of treatment on the duration of hospitalization. Of the 19 patients treated in 1941, five were under our care and were treated by packs. However, because of our lack of experience and the lack of training of our technicians in the Kenny method of muscle reeducation, we classified them as being treated by the old method. Five of the other 14 patients of 1941 returned to us after a year or later for treatments in the Kenny clinic with packs and prostigmine; there was one fatality. The remaining 8 patients have not been treated by us but we have some knowledge of their present condition. Thus we are considering the 1941 group as a control group: all of these patients were treated by recognized orthopedic measures in vogue at that time. All of the groups have had considerable follow-up and observation as out-patients. The 1942-1945 patients were not sent home until they were able to walk on their own power or with the aid of sticks or braces (except one paralytic in 1943 who went home against advice and was treated in bed at home; this patient is completely paralyzed from the hips down and is now beginning to use braces and crutches). On the other hand, many of the 1941 patients were sent home and remained in bed there for some time. Thus, the average hospitalization has been reduced from 160.2 days in the control group of 1941 to 32.1 days in the Kenny-prostigmine group of 1945.

It is noteworthy that the days devoted to packing were reduced from 69.5 in 1942 when no prostigmine was used, to 27.1 in 1944 and 25.8 in 1945 when prostigmine was used in conjunction with the hot packs. This has reduced the nursing care required in the application of hot packs.

TABLE IV. Hospitalization Period

Type of Therapy	1941	1942	1943	1944	1945
Orthodox	X				
Packs		X			
Prostigmine			X		
Packs and Prostigmine				X	X
Days packing per case	0	69.5	0	27.1	25.8
Days of hospitalization	3044	1294.0	336	3163.0	930.0
Hospitalization days per patient	160.2	80.9	66	36.0	32.1

Table V shows the residual incapacitating paralysis present in the various groups as of May 31, 1946. It is at once apparent that the number of patients who are still incapacitated is greater in the 1941 control group. This is true in spite of the fact that 5 of these patients returned to us in the meantime for many more months of additional treatment with hot packs, prostigmine, and occupational therapy.

In the evaluation of the results from year to year one has to keep in mind that the severity of the disease differs from year to year. For example: in 1942 there were only 6 paralytics out of 16 patients; in 1944 there were 55 out of 88; and in 1945 there were 15 out of 29. Thus the 1944 outbreak was more severe than that of other years. It should further be kept in mind that the 1942-1945 groups received closer attention and a great deal more nursing care than the 1941 group. These patients also had the benefit of early diagnosis, Kenny management, prostigmine, other new developments in muscle treatment such as early stretching, etc., functional rehabilitation, and occupational therapy.

TABLE V. Residual Incapacitating Paralysis as of May 31, 1946

Year Type of Treatment	1941 Orthodox	1942 Packs	1943 Prostigmine	1944 Packs & Prost.	1945 Packs & Prost.	Totals
All Patients	19	16	5	88	29	157
All Paralyzed Patients	10	6	4	55	15	90
All Surviving Paralyzed	9	6	4	51	12	82
Upper Extremity	1	0	0	2	0	3
One Ankle	1	0	0	5	0	6
Both Ankles	1	0	0	1	0	2
One Lower Extremity	2	1	0	2	0	5
Both Lower Extremities	0	0	1	0	1	2
Back and Abdomen	0	0	0	1	0	1
Totals	5	1	1	11	1	19
% of All Patients	26.30	6.20	20.00	12.50	3.40	12.10
% of All Paralyzed	50.55	16.66	25.00	20.00	6.66	21.11
% of All Surviving Paralyzed	55.55	16.66	25.00	21.56	8.33	23.17

Table VI records the present status of the 1942-1945 patients on May 31, 1946. All these patients (except 9 who have moved but whose present condition is known) have been reexamined recently at the clinic. The nine who use a brace can walk without it if necessary, and are expected to make further improvement. The three who require an aid are still severely paralyzed; two have both lower extremities completely flail; one has one lower extremity in a brace but may improve more with age. Of the entire group 119 (86.2 per cent) can be classed as functionally normal.

TABLE VI
Present Condition of 1942 - 1945 patients (May 31, 1946)

	No.	Percent
1. Perfectly normal	105	76.1
2. Residual paralysis but not incapacitated	14	10.1
3. Use an aid in order to walk well	9	6.5
4. Not able to walk without aid	3	2.2
5. Expired	7	5.1
Total number of patients treated	138	100.00

Summary

A brief outline of the various methods of treating poliomyelitis is given, with a description of our management of 138 acute cases. The dosage schedule and untoward symptoms encountered by prostigmine therapy are outlined. Tables of 157 acute cases are presented, comparing the results attained by the orthodox method, Kenny packs, prostigmine, and a combination of packs and prostigmine treatment.

Conclusions

The best method of handling acute poliomyelitis at the present time is that based on the Kenny concept of the disease, using hot packs and prostigmine in order to relax muscle spasm, incoordination and alienation, and using Kenny muscle reeducation, functional rehabilitation, and occupational therapy.

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EVALUATION OF SPINAL FLUID EXAMINATION IN PATIENTS WITH POLIOMYELITIS*

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In spite of many authoritative statements concerning the true value of spinal fluid studies in poliomyelitis, discussion of the merits and demerits of spinal taps continues.

An analysis of examinations of spinal fluids from 95 patients may contribute to clarify the important problem. To facilitate the analysis, the patients were divided according to sex, to age groups, and according to the type, and to the outcome of the disease.

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TABLE I. Patients in Whom Spinal Fluids Were Studied

AGE	1 to 7		8 to 14		15 to 21		22 and Over		Totals		
SEX	M	F	M	F	M	F	M	F	M	F	Both
Non-Paralytic, Recovered .	19	4	11	6	1	1	0	4	31	15	46
Paralytic, Recovered	10	3	4	3	2	3	0	1	16	10	26
Paralytic, Incapacitated	10	2	5	1	1	1	1	2	17	6	23
Totals	39	9	20	10	4	5	1	7	64	31	95
Totals	48		30		9		8		95		95

The proportion of male to female patients was roughly 2:1 (64:31). Among the 78 children there were 59 boys and 19 girls (3:1); among the 17 adults were 5 men to 12 women (1:2). The ratio of paralyzed and non-paralyzed patients was roughly 1:1 regardless of sex or of age groups. Twenty-six of all 49 paralyzed patients recovered; of the remaining 23, 6 died, 3 have at present two extremities incapacitated, and 14 still have one extremity paralyzed.

The routine spinal fluid analysis consisted of the gross observation, a quantitative and differential cell count, a globulin reaction (Pandy's), and a quantative estimation of the protein and sugar content. Chlorides were estimated in three samples only: the values were normal (714, 726, 915 mg. per 100 ml.). A colloidal gold was set up 36 times, without the slightest deviation from the normal. A complement fixation test was performed in 42 fluids, with negative results. Aerobic and anerobic cultures of 47 specimens remained sterile.

The spinal fluid pressure was increased in a single non-paralytic patient. The only other abnormal finding in his fluid was a lymphocytic cell count of 400 per cu. mm. This patient recovered. The majority of specimens were clear; cloudiness appeared with an increased number of polymorphonuclear leukocytes. The reaction for globulin was mostly negative, a few fluids with 25 or 35 lymphocytes per cu. mm. giving slightly positive results; as a rule, however, a strong positive reaction appeared with a marked increase in the cell count and then regardless of the type of the cells. Similar observations were made in regard to protein. In the vast majority the values were within normal limits. There were some exceptions: in two fluids with normal cell counts (1 and 4 cells per cu. mm.) the protein equaled 76 and 90 mg. per 100 ml., respectively.* Otherwise, larger amounts of protein (up to 200 mg. per 100 ml.) were present only together with an increase in globulin and in the cell count. It did not seem expedient to determine the protein fractions. The amount of sugar (reducing substances) was mostly normal. In 4 samples the sugar was increased above 85 mg. per 100 ml.—values were 118, 107, 96, and 92.5 mg. per 100 ml. One paralyzed patient who recovered had a spinal fluid glucose of 96 mg. per 100 ml. and 22 lymphocytes per cu. mm.; another paralyzed patient who did not recover completely had 118 mg. of glucose, 70 lymphocytes; two patients with bulbar paralysis who both expired had 92.5 mg. of glucose and 600 lymphocytes, and 107 mg. of glucose per 100 ml. and 356 polymorphonuclear leukocytes per cu. mm. The findings were in no relation to the age and sex distribution of the patients nor the type of their disease.

The relation of the cell count to disease, age, and sex is shown in Table II.

From Table II it is evident that of our 95 patients, 42 or 44.2 per cent, had less than 11 cells per cu. mm. in the spinal fluid, 31 or 32.6 per cent, had between 11 and 100 cells, while 22, or 23.2 per cent, showed a cell count higher than 101. The 49 paralyzed patients were represented with 16, 21 and 12, respectively, in the arbitrary three-cell groups (up to 10, 11 to 100, 101 or more). The non-paralytic showed a different distribution: 26, 10 and 10.

Of 42 patients with normal spinal fluid cell counts, 16, or 38 per cent, were paralytic and 26, or 62 per cent, were non-paralytic. In the series of 53 patients with elevated spinal fluid cell counts 33, or 62 per cent, were paralyzed

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* Albumino-cytologic dissociation, Guillain-Barre syndrome.

TABLE II. Patients arranged according to the number of cells in the spinal fluid, age, sex, and type of poliomyelitis.

Number of Cells Per cu. mm. of Spinal Fluid	Age in Years	1 to 7		8 to 14		15 to 21		22 and Over		Totals			Total number of patients in each "cell group"
	SEX	M	F	M	F	M	F	M	F	M	F	Both	
6 to 10	Non-paralytic Recovered	12	4	5	4	0	1	0	0	17	9	26	42=44.2%
	Paralytic Recovered	5	2	0	1	1	0	0	1	6	4	10	
	Paralytic Incapacitated	2	1	1	0	1	0	1	0	5	1	6	
11 to 100	Non-paralytic Recovered	1	0	3	2	1	0	0	3	5	5	10	31=32:6%
	Paralytic Recovered	2	1	3	1	1	2	0	0	6	4	10	
	Paralytic Incapacitated	7	1	2	0	0	1	0	0	9	2	11	
101 or more	Non-paralytic Recovered	6	0	3	0	0	0	0	1	9	1	10	22=23.2%
	Paralytic Recovered	3	0	1	1	0	1	0	0	4	2	6	
	Paralytic Incapacitated	1	0	2	1	0	0	0	2	3	3	6	
	Totals	39	9	20	10	4	5	1	7	64	31	95	95=100%
		48		30		9		8		95		95	

and 20, or 38 per cent, were non-paralyzed. Thus, the ratio of paralytic and non-paralytic patients was reversed in this survey.

The distribution of patients with bulbar paralysis and of the ones who expired is shown in Table III.

Of 10 patients with bulbar paralysis 4 expired. All had pleocytosis; three had lymphocytic and one had leukocytic characteristics. Of the six patients who recovered, 5 had predominantly lymphocytes and one polymorphonuclear leukocytes. Polymorphonuclear pleocytosis was present in the two patients without bulbar paralysis who expired.

The total number of patients whose spinal fluid showed polymorphonuclear leukocytes was 13. Ten of these patients were paralytic and 5 of these ten had bulbar paralysis; two were non-paralytic. Four of the 13 patients with polymorphonuclear leukocytes in their

TABLE III. Number of cells per cu. mm. in spinal fluids from bulbar and deceased patients, arranged according to character of condition, age, sex, and predominant type of cells.

Age in Years	1 to 7		8 to 14		15 to 21		22 and Over		TOTALS		
SEX	M	F	M	F	M	F	M	F	M	F	Both
Bulbar Recovered	2 (4L)* (180L)	0	1 (48L)	2 (3L) (90L)	0	1 (709P)*	0	0	3	3	6
Bulbar Expired	2 (20L) (70L)	0	0	1 (356P)	0	0	0	1 (600L)	2	2	4
Paralytic Expired	0	0	1 (500P)	0	0	0	0	1 (131P)	1	1	2
TOTALS	4	0	2	3	0	1	0	2	6	6	12
	4		5		1		2		12		12

*"L"—Lymphocytes, "P"—Polymorphonuclear Leukocytes.

spinal fluid died (2 had bulbar paralysis), 4 have at present residual paralysis, 5 (among them 2 with bulbar paralysis) recovered completely. In 6 patients with polymorphonuclear leukocytes the cell count was above 101. The highest count in the group was 709 cells, while the highest lymphocyte count was 888 per cu. mm.

There were some patients with mixed cell types: a non-paralytic child with a total count of 480 cells per cu. mm. had 60 per cent lymphocytes, 40 per cent leukocytes.

Because of the statement that polymorphonuclear leukocytes predominate during the first days of illness and then give way to lymphocytes, the time between onset of the disease and the first spinal tap was noted. Polymorphonuclear leukocytes were found anywhere up to the 41st day of illness, but only once the 1st, and twice the 2nd day among 12 and 7 taps respectively.

Twelve taps were done the first day of the disease: seven non-paralytic patients had from 1 to 6 cells, one had 35 cells, one had 480 cells, while 3 paralyzed patients had 1, 70, and 709 cells per cu. mm. The patient with 709 polymorphonuclear leukocytes recovered, the one with 1 lymphocyte remained incapacitated, one with 70 lymphocytes died. On the second day of illness 7 taps were made: 3 non-paralytic patients had 1, 36, and 600 lymphocytes, 4 paralyzed patients had 20 and 50 lymphocytes and 18 and 146 polymorphonuclear leukocytes per cu. mm. The last of these patients had residual paralysis, the one with 20 lymphocytes expired. The sixth day has been selected as another example: four nonparalyzed patients had 10, 296, and 400 lymphocytes and 587 polymorphocellular leukocytes each, one paralyzed who later recovered had 788; another who remained paralyzed, only 30 lymphocytes per cu. mm.

In 4 patients the spinal tap was repeated the next day: in one with bulbar paralysis (recovered) there were 2 and 4 lymphocytes, in a paralyzed recovered 54 and 47 polymorphonuclears, in a paralyzed who remained severely incapacitated 18 and 133 polymorphonuclears, and in a non-paralytic patient 87 and 16 lymphocytes per cu. mm. In two patients, two days elapsed between two taps: one, a non-paralyzed, had 140 and 200 lymphocytes; the other one, a paralytic who expired, 505 and then 110 polymorphonuclears per cu. mm. Finally, in one child the tap was done on three consecutive days with 27, 5 and 32 polymorphonuclear leukocytes per cu. mm. of spinal fluid.

DISCUSSION

This survey shows that there is no difference in spinal fluid findings from male to female patients with poliomyelitis, nor from infants, children, adolescents, or adults. In our series the youngest patient was 10 months, the oldest 42 years. Correlation of spinal fluid findings and severity of disease reveals that 50 per cent of non-paralytic patients have cell counts below 10 per cu. mm., 25 per cent have between 11 and 100 cells, and 25 per cent over 101 cells; while paralyzed patients are represented by 33 per cent in each of the three cell groups. The cell count of half of the patients with bulbar paralysis was very high, and in all but one elevated. Also half of these patients showed polymorphonuclear leukocytes. Patients with polymorphonuclear leukocytes in their spinal fluid had in the majority a severe disease; even so, some recovered completely. The statement that polymorphonuclear leukocytes dominate in the beginning of the disease could not be confirmed. Neither the type of cells nor their number follows a pattern as far as the date of illnes is concerned. There is considerable oscillation in the cell count during the course of the disease.

CONCLUSIONS

Because of the variation of findings and of the impossibility of arriving at any conclusions as to the type or degree of disease, the spinal tapping in patients with poliomyelitis may be omitted for a typical case having an acute onset with vomiting and fever and followed immediately by rigidity of the neck and back, and paralysis of one or more groups of muscles.[1] In cases with bulbar and paralysis spinal fluid should be withdrawn with great care; in the asthenic type, it should not be done at all.[2] Regardless of the type of disease only a small amount of fluid (2 c. c.) should be withdrawn.

SUMMARY

The analysis of spinal fluid examinations of 95 patients with poliomyelitis justifies the following statements:

1. The spinal fluid examination in suspected cases of infantile paralysis should not be considered a diagnostic procedure, but rather be performed for differential diagnostic purposes to rule out conditions simulating symptoms of poliomyelitis.

2. One cannot correlate the number or type of cells in the spinal fluid with the type, duration, severity or outcome of the disease.

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INTERPRETATION OF SEMEN STUDIES

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The evaluation of semen analysis depends largely upon the background and experience of the person making the study. The fact that one has to take the examined person's statements with a grain of salt does not make the task easier.

The Society for the Study of Human Fertility set definite standard requirements for semen examination[1]:

1. A three-day sexual abstinence is required before the examination.
2. The material has to be secured by interrupted coition or by autoerotic manipulation.
3. The specimen should be delivered into a clean and dry wide-mouthed glass container and should be examined within one-half hour.

The same group agreed on the normal values:

1. Semen should be viscid on ejaculation and should liquefy within thirty minutes.
2. The minimum normal volume of a sample is 2.5 c. c.
3. At least 80 per cent of all spermatozoa should be motile in the fresh sample, at least 75 per cent after 2 hours, and 10-25 per cent should be still active after 8 hours.
4. Minimum spermatozoa count per c. c. is 60,000,000; the minimum count per sample is 150,000,000.
5. The number of abnormal spermatozoa should not exceed 20 per cent.

Ten different ejaculates, representing a cross-section of the usual findings, are here analyzed. All men except one (No. 5) were examined because of barren marriage. The wives of these men were supposedly healthy. The reader who may miss a condition known under the name of "necrospermia" may, or may not accept the author's concept that such a condition does not exist. Moreover, the writer believes that all normal spermatozoa are normally motile on fresh examination. On the other hand, of the teratoid spermatozoa only those with a head smaller than normal are capable of normal movements.

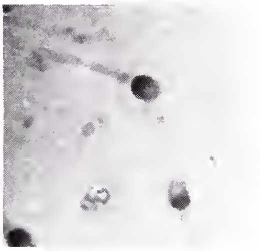
Fig. 1: Normal spermatozoa; Giemsa's stain, x 520. Patient #1.

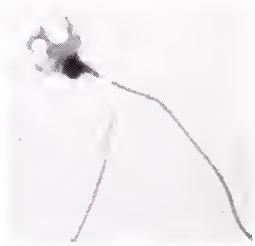
Fig. 2: Juvenile spermatozoon with vacuolized cytoplasmic rest (protoplasma of the spermatid) on the head; Giemsa's stain, x 520. Patient #2.

Fig. 3: Anisozoospermia: macrospermatozoon (head at 12 o'clock), megalospermatozoon (head at 8 o'clock); Giemsa's stain, x 380. Patient #7.

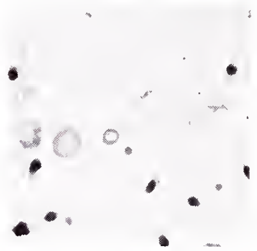
Fig. 4: Strongylospermatozoa (round heads); Giemsa's stain, x 380. Patient #3.

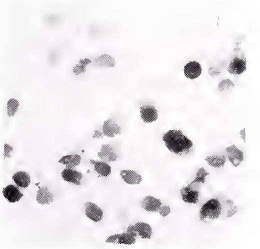
Fig. 5: Normal sperm population in biopsy of ejaculate. Paraffin section; Hematoxylin-eosin stain, x 450. Patient #6.

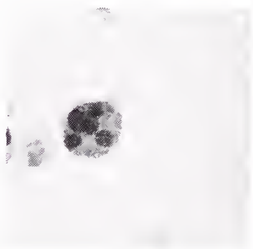
Fig. 6: Multinuclear spermatid in biopsy from semen with azoospermia. Paraffin section, Hematoxylin-eosin stain, x 450. Patient #9.

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* Pathologist, Wilmington General Hospital.

CASE 1

Highlights of the history: A 33-year-old patient, married 3½ years, no contraceptives used. Patient had anterior gonorrhea five years ago which has been completely cured.

Volume: 5.3 c. c.

Cell Count: 106,475,000 per c. c.; 564, 317,000 per sample.

Motility: 90 per cent normally motile; 10 per cent non-motile. After 2 hours 75 per cent active.

SPERMIOGRAM

Spermatids	2	Cells of the evolution	2	Immature	2%
Normospermatozoa	80	Normal	80	Normal	87%
Small head	2				
Large head	2	Physiologic variants	7		
Round head	2				
Tapering head	1				
Deformed head	10				
Displaced acrosome	1	Head abnormalities	11	Teratoid	11%

Residual bodies

Interpretation: Normal sample. Barrenness of this couple, as of the others in which the semen was normal, may be due to faulty deposition or reception of semen, or to coital errors.

Diagnosis: Normospermia, Normozoospermia.

CASE 2

Highlights of the history: A 23-year-old patient, married for four years. Last sexual intercourse 16 hours preceding the coition at which the presented sample was produced.

Volume: 3.8 c. c.

Cell Count: 105,000,000 per c. c.; 385,000,000 per sample.

Motility: 65 per cent normally motile; 35 per cent non-motile. After 2 hours 10 per cent active.

SPERMIOGRAM

Spermatogonia	1				
Spermatocytes	3				
Praespermatids	5	Cells of the evolution	12		
Spermatids	3			Immature	19%
Cytoplasm on head	4				
Cytoplasm on neck	3	Juvenile	7		
Normospermatozoa	57	Normal	57		
Small head	1			Normal	62%
Tapering head	4	Psysiologic variants	5		
Asthenic head	1				
Deformed head	10	Head abnormalities	13		
Displaced acrosome	2			Teratoid	19%
Deformed neck	4	Neck abormalities	4		
Displaced centrosome	2	Neck abnormalities	4		

Residual bodies.

Interpretation: Fairly normal semen with a subnormal number of normospermatozoa and an abnormally high number of immature forms. The number of cells of the spermatogenesis series is 12 instead of the normal 0.5-2 per cent. This hasty regeneration is most likely due to the fact that two ejaculations occurred 16 hours apart. It is quite safe to to assume that an examination after a three-day pause would reveal an entirely normal semen.

Diagnosis: Oligonormozoospermia. Shift to the left.

CASE 3

Highlights of the history: A 30-year-old man, married six years, but only in the last seven months no contraceptives have been used. The patient is an alcoholic.

Volume: 3 c. c.

Cell Count: 85,000,000 per c. c.; 255,000,000 per sample.

Motility: All motile 70 per cent; 60 per cent normally motile; 10 per cent sluggishly; 30 per cent non-motile. After 8 hours 15 per cent motile.

SPERMIOGRAM

Spermatocytes	2	Cells of the evolution	4		
Spermatids	2			Immature	7%
Cytoplasm on head	2				
Cytoplasm on neck	1	Juvenile	3		
Normospermatozoa	29	Normal	29	Normal*	70%
Small round heads*	41	Variants*	41		
Asthenic heads	3				
Deformed heads	8	Head abnormalities	23	Teratoid	23%
Displaced acrosome	12				

Some pus cells.

Interpretation: This semen is normal in all but one respect: 41 per cent of all spermatozoa show a small and round head. A somewhat smaller head, or rounded head, may be considered in the limits of normal variants. In a combination the normalcy is doubtful. The number of round or small spermatozoa hardly ever exceeds 4 per cent of all cells. The number of microstrongylospermatozoa in this sample is 41 per cent. It is, therefore, impossible to pass over this phenomenon. The motility of this cell type is normal, even after 8 hours. Therefore, one has to assume that we face an unusual variant of normal spermatozoa. The patient's alcoholism may or may not have bearings upon the spermiogram. Many alcoholics have perfectly normal spermatozoa. The writer recalls a similar finding in an epileptic patient. The only reference to the problem is Stiasny and Generales'[2] mentioning that alcoholics have often large and round spermatozoa. They report two spermiograms of alcoholics (in one there are more deformed heads than round heads, in the other there are 20 per cent spermatozoa with round heads, 15 with small and 12 with large heads) and one of an epileptic alcoholic (with 25 per cent round, 11 per cent large heads). Incidentally, their 11 epileptics have many strongylospermatozoa (from 5 to 25 per cent). The variation observed in this semen represents most likely a constitutional anomaly. (Something like elliptocytosis of erythrocytes.)

Diagnosis: Normospermia with microstrongylozoospermia.

CASE 4

Highlights in the history: A 33-year-old patient, married 3½ years. Contraceptives used in the first half year of marriage only.

Volume: 3.1 c. c.

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* The spermatozoa with small round heads were considered as "normal," chiefly because of their normal motility.

Cell Count: 95,750,000 per c. c.; 287,250,000 per sample.

Motility: All motile, 80 per cent; 30 per cent normally motile; 50 per cent sluggishly motile; 20 per cent non-motile. After 2 hours 25 per cent motile.

Spermiogram

Cytoplasm on head	0.5	Juvenile	3.5	Immature	3.5%
Cytoplasm on neck	3.0				
Normospermatozoa	72.5	Normal	72.5	Normal	76.5%
Small head	0.5	Physiologic variants	4.0		
Large head	0.5				
Round head	1.0				
Tapering head	2.0				
Asthenic head	2.0	Head abnormalities	20.0	Teratoid	20.0%
Gigantic head	2.0				
Deformed head	12.0				
Displaced acrosome	4.0				

Interpretation: This semen is normal save for the motility of the spermatozoa. The number of all active spermatozoa and of all normally developed spermatozoa agree. However, on examination of the fresh sample procured by masturbation only three out of eight are normally motile, while the other five move only slowly. There is at present no explanation for this phenomenon. It is frequent in alcoholics and in smokers. A second examination may possibly show normal motility as this is frequently a temporary phenomenon.

Diagnosis: Normospermia, Hypokinesis.

Case 5

Highlights of the history: A 42-year-old man who brought a semen sample from nocturnal emission.

Volume: 4.4 c. c.; rusty brown colored.

Cell Count: 95,000,000 per c. c.; 418,000,000 per sample.

Motility: 50 per cent normally motile after 18 hours.

Spermiogram

Cytoplasm on neck	3	Juvenile	3	Immature	3%
Normospermatozoa	83	Normal	83	Normal	89%
Small head	2	Physiologic variants	6		
Large head	2				
Round head	1				
Tapering head	1				
Deformed head	6	Head abnormalities	8	Teratoid	8%
Displaced acrosome	2				

Numerous well preserved erythrocytes, few leukocytes

No characteristic microflora. A few gram-positive diplococci, cocci and rods, no acid-fast organisms.

Benzidine test for blood pigment: strongly positive.

Interpretation: The abnormal findings in this sample are the brownish discoloration of the specimen and the microscopic finding of red blood cells. It is remarkable that 50 per cent of the spermatozoa were normally motile 18 hours after production of the sample, and that they were active in the presence of a large number of erythrocytes. The explanation of the hemospermia would be simple if the sample would originate from masturbation or from repeated intercourse within a short interval. The rupture of small blood vessels during a forceful ejaculation is not unusual. The blood may originate anywhere in the urogenital tract and may be caused by a number of conditions ranging from varicosity to papilloma. Only a careful urologic examination could aid to determine the site of hemorrhage.

Diagnosis: Hematospermia, Normozoospermia.

Case 6

Highlights of the history: A 42-year-old man, married for ten years. In the first year of marriage a healthy, normal boy was born. During the last three years no contraceptives have been used.

Volume: 3.1 c. c.

Cell Count: 49,310,000 per c. c.; 152,861,000 per sample.

Motility: All motile, 90 per cent; 80 per cent normally motile; 10 per cent sluggishly motile; 10 per cent non-motile. After 2 hours 70 per cent motile.

Spermiogram

Cytoplasm on neck	5.5	Juvenile	5.5	Immature	5.5%
Normospermatozoa	84.0	Normal	84.0	Normal	87.0%
Small head	0.5	Physiologic variants	3		
Large head	1.0				
Round head	0.5				
Tapering head	1.0				
Giant head	1.5	Head abnormalities	7.5	Teratoid	7.5%
Deformed head	4.0				
Displaced acrosome	2.0				

Interpretation: A case of one-child sterility. The number of spermatozoa per c. c. is 49,310,000 which is about 10,000 below the accepted minimum while their number per total volume is just at the lowest normal limit. This is a typical case of oligozoospermia and the prognosis is very good as this condition usually is a temporary one. In addition, instances of fertilization with semen with even lower counts are well-known, provided that the other features are normal, as in this case.

Diagnosis: Oligozoospermia.

Case 7

Highlights of the history: A 36-year-old man.

Volume: 4.8 c. c.

Cell Count: 45,000,000 pr c. c.; 216,000,000 per sample.

Motility: All motile, 85 per cent; 60 per cent normally motile, 25 per cent sluggishly motile, 15 per cent non-motile. After 2 hours 45 per cent motile.

Spermiogram

Spermatocytes	5	Cells of the evolution	6	Immature	15%
Spermatids	1				
Cytoplasm on head	1	Juvenile	9		
Cytoplasm on neck	8				
Normospermatozoa	48	Normal	48	Normal	54%
Small head	1	Physiologic variants	6		
Narrow head	4				
Tapering head	1				
Asthenic head	3	Head abnormalities	29	Teratoid	31%
Giant head	2				
Deformed head	6				
Displaced acrosome	18				
Deformed neck	1	Neck abnormalities	1		
Displaced centrosome	1	Tail abnormalities	1		

Many residual bodies

Interpretation: The number of spermatozoa per 1 c. c. is lower than normal, the number per sample is, however, normal. There is an increase in immature forms, and especially an abundance of abnormal forms of spermatozoa. The number of abnormal forms should not exceed 20 per cent; it is, however, 31 per cent in this sample. There is a wide variety of abnormally formed spermatozoa. The prognosis is only fair, but by no means good.

Diagnosis: Aethenozoospermia. Anisozoospermia.

CASE 8

Highlights of the history: A 27-year-old man who has been married four years. Contraceptives were used for three years. Last sexual intercourse a day prior to semen study.

Volume: 1.9 c. c.; after thirty minutes thick liquid with some gelatinous particles.

Cell Count: 12,500,000 per c. c.; 23,750,000 per sample.

Motility: All motile, 85 per cent; 35 per cent normally motile; 50 per cent sluggishly motile; 15 per cent non-motile. After 2 hours 30 per cent active.

SPERMIOGRAM

Spermatogonia	1	Cells of the evolution	8	Immature	14%
Spermatocytes	2				
Spermatids	1				
Metaspermatids....	4				
Cytoplasm on head	1	Juvenile	6		
Cytoplasm on neck	5				
Normospermatozoa	48	Normal	48	Normal	54%
Tapering head	6	Physiologic variants	6		
Deformed head....	18	Head abnormalities	29	Teratoid	32%
Displaced acrosome	11				
Deformed neck....	1	Neck abnormalities	1		
Displaced centrosome	2	Tail abnormalities	2		
Residual bodies					

Interpretation: This sample is largely abnormal. The volume is subnormal, the liquefaction is incomplete, the cell count is very low per c. c. and per sample as well, half of the spermatozoa are sluggish, the number of immature forms is high, and so is the number of teratospermatozoa. Only the large number of immature cells may be taken lightly because the patient had sexual relationship 24 hours prior to examination. The other findings are serious. The high number of abnormal forms makes one doubt whether it is worthwhile to attempt stimulation of a germ plasma which may be a priori abnormal.

Diagnosis: Asthenospermia. Asthenozoospermia, Anisozoospermia.

CASE 9

Highlights of the history: A 32-year-old man, married for five years. In the first year of marriage contraceptives were used. Testicles descended into the scrotum after puberty, their size is about one-half of the norm.

Volume: 1.6 c. c.; after 30 minutes and after one hour there are still jello-like particles present.

The examination of hanging drops and slides reveals a few round cells but no spermatozoa. Besides leukocytes there are some large mononuclear phagocytes, a few cells of the spermatogenesis series, spermatids, some multinuclear spermatids, praespermatids and especially spermatocytes, some of which are in telophase. In some of the large cells are inclusions (possibly representing heads of spermatozoa?).

Interpretation: The volume of this sample is subnormal and the liquefaction is incomplete. Spermatozoa are absent, but a few cells of the spermatogenesis series are present in films and in histologic sections of the specimen. We diagnose a maturation arrest in the evolution of the germ cells. In similar instances testicular biopsy is used to decide whether this state is due to atrophy of the cells of seminiferous tubules or due to hypoplasia. The post-pubertal descensus of the testicles explains fully the testicular hypoplasia of our patient.

Diagnosis: Asthenospermia, Azoospermia.

CASE 10

Highlights of the history: A 32-year-old man, married for five years. Had a right hernia operation a few years ago. Right testicle one-third the size of the left one.

Volume: 1.6 c. c.

No spermatozoa or cells of the spermatogenesis series in fresh drops, smears and paraffin sections. A moderate number of polymorphonuclear leukocytes, a few gram-positive cocci in clusters, an occasional gram-negative rod.

Interpretation: The amount of semen is small. There are no spermatozoa or cells of the spermatogenesis series present in multiple slides and sections of the ejaculate. We are dealing with a bilateral obstruction of the seminal passages. The patient's right testicle is atrophied due to ligation of the was deferens during the operation of the hernia. There is, however, an obstruction on the left side as well, the site of which can only be detected by urethroscopic catheterization and radiography. Most likely this patient had had a left side epididymitis which led to obstruction. A biopsy of the left testicle is indicated. Should such biopsy reveal normal germ plasma, an epididymo-vasostomy could be performed, or the patient's own semen, secured by puncture, could be used for artificial insemination.

Diagnosis: Aspermia.

DISCUSSION

Because each case has been discussed together with the interpretation of the results of the semen study, a general discussion seems unnecessary. Instead, the various terms used in the diagnosis will be clarified.

Normospermia: a normal semen sample.

Normozoospermia: normal spermatozoa.

Oligonormozoospermia: decreased number of normal spermatozoa.

Oligozoospermia: subnormal number of spermatozoa.

Microstrongylozoospermia: semen with spermatozoa with small round heads.

Hypokinesis: lowered degree of motility.

Shift to the left: an increase in immature cells of the spermatogenesis series.

Hematospermia: semen mixed with blood.

Anisozoospermia: variation in forms of spermatozoa.

Asthenozoospermia: deficient spermatozoa.

Asthenospermia: deficient semen.

Azoospermia: no spermatozoa present, cells of evolution present.

Aspermia: no semen present, no testicular elements whatsoever.

Summary

Twelve analyses of semen samples which represent a cross-section of findings are presented.

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UROLOGIC OBSERVATIONS IN THE EUROPEAN THEATRE OF OPERATIONS

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This report represents personal observations over a three-year period in several hospitals during the course of the war. It is not an attempt to detail the urologic coverage from an overall point of view. The bases for the data included in this paper are notes and case records made at the time they were observed. The E. T. O. in this article refers entirely to the United Kingdom which until after D-Day, June 6, 1944, was the E. T. O. The material collected from December, 1942, until December, 1945, is divided into three sections:

First Period—Before D-Day

8 December 1942—6 June 1944. During this period the urologic service consisted in the main of office urology with an emphasis on the treatment of gonorrhea, non-specific urethritis, chronic prostatitis, and diagnostic cystoscopies and pyelographies. There was an occasional ureteral calculus that in my experience passed without operative interference. The management of gonorrhea was at a later date transferred to the medical service for administrative reasons. However, I continued to see these patients despite the directive that acute gonorrhea was a medical and not a urological problem.

For the long period before D-Day the work resembled that of civilian practice. The serious diseases were pretty well screened out before the young troops came overseas. The diseases present in this group had an acute character. As a group from which to draw patients these men had little to offer. There was no prostatism among this group. However, two unusual urologic symptom complexes arose among these soldiers in a percentage far in excess of anything I had seen in civilian practice in otherwise healthy adults. The incidence was too great to be ignored. The experience of other urologists in the E. T. O. similar to mine confirmed the impression that we were dealing with a real entity generated by the circumstances in which the troops were living.

The first of these conditions is the so-called "non-specific urethritis," which the Army designated as non-venereal. During the early days in England as many as 25 per cent of all urethral discharges were reported as non-specific. This was out of all proportion to the civilian incidence of this same condition. The diagnosis was based upon repeated negative microscopic and cultural examinations for Neisseria gonorrhoeae. Occasionally, gram-negative extra-cellular displococci or gram-positive extra-cellular diplococci were seen. In most instances smears of the urethral discharge showed only pus cells and no microorganisms. The history was typical and the discharge itself had a characteristic appearance: the patient, when questioned, reported that in the past ten to fourteen days (sometimes less, but rarely more) he had had sexual exposure, sexual excitement, or an alcoholic debauch. Prohylaxis of the mechanical and the chemical variety had in many cases been taken. The patient had no urinary symptoms at all. However, in the morning before the initial voiding upon waking he noted a small pearly gray drop of pus at the meatus which he milked off or washed off with urine and then had nothing more to note all day. This was again seen on the following day and the patient reported on sick call. One additional detail of history which on questioning could be elicited was that from the time of the most recent sexual exposure the patient had been worried as to the possibility of contracting a venereal disease and to check on this possibility had daily been stripping down his penis to see if there was any discharge. Eventually he found something and reported for medical attention. On other occasions, however, this type of morning drop, the *goute militaire*, was found on morning physical inspection and the man was told to report for examination on sick call. The discovery of this suspicious urethral discharge was a surprise to the patient who could not, or so claimed, account for its presence.

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In the beginning these patients were treated much as if they had an acute gonorrhea. They were given a course of sulfadiazine for five days, treated on duty, and restricted to the post for a period of two weeks following the course of therapy. The usual prohibitions concerning sexual excitement and alcohol were made. Later penicillin was substituted for the sulfadiazine with the same results. The discharge persisted despite chemotherapy but became watery in the morning, mucoid rather than purulent. No irrigations, instillations or prostatic massages were instituted during this stage of the treatment. Cultures of the secretions remained negative. These patients kept coming back for further treatment, insisting that something was the matter with them. Because the medication was unsuccessful some form of local therapy was tried. First we used instillations of a 5 per cent solution of argyrol to be held in the urethra for five minutes daily. This produced cures in some patients while still others failed to recover. In these we tried irrigations, with a 1:8,000 solution of potassium permanganate. Again a number of patients got entirely well. The length of time required for both of these forms of treatment was about four weeks. Prostatic massage was done in all patients who failed to respond to chemotherapy. Rarely was anything more found on microscopic examination than 5 to 10 pus cells per high power field. Prostatic cultures remained uniformly negative.

Finally, the therapeutic difficulties were linked to the fairly constant history that these patients were more worried than hurt and that they had developed the daily (or more frequent) habit of stripping down the urethra to see if perhaps they had a urethral discharge. This habit was possibily generated out of the Army's repeated "short arm" inspections and the educational program concerning venereal disease.

It was felt that the origin of the non-specific urethritis was the result of mechanical irritation secondary to the repeated stripping down of the urethra. Because of psychologic concern over the possibility that perhaps the patient might have acquired a urethral infection from some recent completed or attempted indiscretion, the treatment was shifted from chemotherapy to psychotherapy. First, the patient was earnestly assured that as a result of all the tests we were convinced that he did not have any venereal disease. Secondly, he was told to stop stripping down his penis and to stop examining himself every time he voided. Thirdly, he was counselled against any sexual or alcoholic excitement for a period of several weeks until the symptoms secondary to a low grade inflammation had subsided. With a combination of reassurance, explanations, and the enlightenment of understanding as to the mechanism of this type of urethritis (mechanical urethritis) good cooperation was enlisted and the patient improved.

The second symptom complex which was very prevalent in England during the months of waiting for D-Day was a marked urinary frequency, urgency, and nocturia without organic disease. Of the three symptoms the almost painful urgency was the most common and the thing which the patients complained of most. These symptoms were observed among a wide group of unselected personnel, field and garrison troops, officers and enlisted men alike. It was more prevalent among recent arrivals to the E. T. O. than among those who had been there for many months. An increased number of patients with these complaints was seen in fall and winter seasons. This was most likely coincidental.

Initially, many of these patients were admitted to the hospital and studied generally and with a full urologic work-up which included prostatic examination, a smear and a culture. The patients were cystoscoped and retrograde pyelograms were done. Nothing more than a slight trigonitis was seen. Urine cultures from kidney pelves and bladder were negative. General physical examination, blood counts, blood chemical tests and chest x-rays were likewise non-contributory. A diet which restricted tea, coffee and condiments was ordered. Medication consisted of a combination of tincture hyoscyamus, potassium citrate and potassium bromide in camphor water as vehicle. Codeine was administered in the more severe cases. Sitz-baths were employed with good results, as they rapidly relieved the symptoms of bladder neck irritability. In all of the patients the condition cleared up completely within a week to ten days.

An explanation for this symptom complex was sought. Climatically these patients suffered a sudden change: many were abruptly thrust from a warm or cold, but dry climate into a climate which was perpetually damp and cool. The output of fluids by perspiration was markedly diminished. This increased the excretory load of the urinary tract. A second factor was a change in the character and quantity of the fluid intake. Instead of water, milk, coffee, coca cola, or other soda-fountain beverages the intake in England shifted to large amounts of tea, coffee, and beer with a drop in the water intake per se. These three exerted thir well known diuretic plus their irritant effect and the symptoms of frequency, urgency and nocturia followed.

An adjustment in the water balance occurred when the troops had become acclimated and learned how much and what to take and when to stop. Most likely they also developed some tolerance to the beverages consumed after a course of time.

From January to April 1944, I had the good fortune to be assigned to a British Venereal Disease Hospital at Netley, part of the Royal Victoria Hospital and under the guidance of Lt. Col. Ambrose King. I participated in the operation of the Kettering Hypertherm in the treatment of resistant gonorrhea and its complications, including gonorrheal arthritis. During this time I supervised the treatment of about 150 patients. There were no fatalities. More than 85 per cent of the patients were cured from a single eight-hour course of artificial fever at a temperature of 106° F. With repeated courses of therapeutic fever the percentage of cures was boosted to approximately 90 per cent. In the British series there were more than a thousand patients. My contact was a most stimulating one and the experience invaluable.

Second Period—During the Battle in Europe

6 June 1944—8 May 1945. Our unit took over the physical plant previously occupied by the British Venereal Disease Hospital at Netley and converted it into a Transit Hospital for the reception and evacuation of casualties from the invasion of France. Being only four miles from Southampton we were strategically located for such a function. The first casualties were received on D-plus-2.—three hundred freshly wounded soldiers and sailors who had had nothing more than first aid in some battalion aid-station. This was only the beginning and in an incredibly short time the hospital of 850 beds was full. The evacuation side of the hospital then went into operation. It was soon found that in order to function efficiently as a Transit Hospital only that was done which was absolutely necessary in order to make patients evacuable by rail to some General Hospital where they could receive more definite treatment. Patients were often in the hospital for less than 24 hours. For this reason the urologic work was limited mainly to conservative management and consultant examination. In selected patients, however, major surgery was performed to make the patient better fit for transportation than he would have been if symptomatic treatment only were given.

The first type of patient is epitomized by a man referred for consultation on June 9, 1944 (D-plus-3): a sailor with a blast injury to his chest and a fractured right tibia presented gross hematuria. The patient was in a considerable shock and in severe respiratory distress. His general condition was critical and supportive measures were administered, including nasal oxygen, intravenous 5 per cent glucose, and alkalization with large intravenous doses of sodium citrate. The patient had been injured on June 5th when a minesweeper he was on hit a mine and the ship blew up and sank. He was tender in both flanks and we assumed that the hematuria was part of the general picture of blast injury of which a chest x-ray showed the rather typical findings. In a few days the patient's condition improved, his hematuria diminished. The patient received 100,000 units of penicillin and no sulfonamides. He was always able to void. Bladder catheterization and lavage was done to rule out any possibility of lower tract injury. With an additional diagnosis of blast injury to both kidneys the patient was evacuated, in good condition and without hematuria, further inland to a General Hospital.

The other type of urologic patient received is well characterized by a man admitted on D-plus-4 (June 10, 1944) who had been wounded in action (gun shot wound of the left flank.) The bullet lodged beyond his bladder over the 5th lumbar vertebra in the midline. The history revealed that the patient had been wounded on June 6th but that at that time it was impossible to decide whether or not his bowel had been perforated. As his condition was not immediately serious the treatment consisted solely of penicillin administered. Up to the time of admission to our hospital the patient had received more than half a million units of penicillin. He gradually developed a board-like abdomen and on admission was dangerously ill. He had a high fever, a leukocyte count of 18,000 cells per cu. mm. with a marked shift to the left in the hemogram. He was irrational and violent and sedatives had to be given. No surgery had been done prior to admission except slight debridement of the entrance wound of the bullet. There was no drainage from the wound on admission and no history of any drainage. The patient's condition was so serious that it was felt that if nothing were done he would die, as he might also from any surgical insult. The diagnosis of peritonitis probably secondary to the severing of the left ureter or to injury to the left kidney itself was made.

Under general anaesthesia the wound was explored carefully and in dissecting it down it was found to be fairly well walled off. From the abdominal cavity 4,000 c. c. of blood-tinged urine were removed by suction. The intestines were matted together and there was evidence of walling off in the abdominal cavity. The abdomen was liberally dusted with sulfanilamide powder and drains placed along the tract and in the lateral gutter. The ureter was brought out through the wound and it drained freely post-operatively. The wound was closed loosely. At the end of the operation the patient's condition was very poor. In the next few hours the patient became increasingly comatose despite intravenous administration of fluids and sulfadiazine and intramuscular injections of penicillin. He died four hours after the operation. Clear urine was draining from the left ureter. At autospy, no perforation of the bowel was found. The intestines were matted together with a firm exudate. The bullet was not removed. An early diagnosis was missed because the force of the bullet had driven the severed end of the ureter inward and the skin had sealed over, preventing urinary leakage through the wound of entrance.

This was the only death on the urologic service during the next ten months. As more hospitals moved to the continent the operative load diminished on the Transit Hospitals. In the early days the work resembled that of an Evacuation Hospital. A great volume of work had to be done in order to make these patients ready for evacuation. Between June and September there were six major urologic operations, mainly bladder and perineal repairs. There were sixteen minor urologic operations including removal of foreign bodies from the scrotum, debridements of the genitalia, bladder, perineum and kidney region. Between June 6, 1944 and January 1, 1945, 45,000 patients were admitted to the Transit Hospital. Of that number there were almost four hundred urologic patients of all kinds, many already operated upon and in no need of immediate treatment. Others were patients with non-surgical conditions incidental to the war injuries and these were relatively minor in the great flow of battle casualties. At the turn of the year the Transit Hospital had outlived its purpose. There were so many hospitals on the continent and the method of evacuation had changed considerably so that the function of the hospital at Southampton changed to part Transit and part General.

At this time I was transferred to the 162nd General Hospital as Chief of the Urology Section. In this hospital were many old patients waiting disposition. Much of the work was diagnostic. A few urologic injuries were received from the air forces still stationed in the vicinity. Some elective work was done on hydroceles, a hernia with associated undescended testicle, circumcisions, secondary closures, and skin grafts.

Third Period—After the War

8 May 1945—24 December 1945. From May to September the medical load was lighter. There were no more battle casualties. How-

ever, things changed in September when the war was definitely over. This was the closing-down period. Hospitals were being deactivated, and we tried to conduct a service with less and less equipment all the time. The urologic work was much as it was prior to D-Day. There were diagnostic cystoscopies, instances of chronic prostatitis, non-specific urethritis, epididymitis, and a few ureteral calculi. None of these presented problems except that of disposition. The directives encouraged disposition to the Zone of the Interior (U. S. A.) of all patients whose condition was even slightly suggestive of long hospitalization. We knew from experience how to treat patients with non-specific urethritis. Patients who were going home were more worried than ever about the possibility that some of their overseas indiscretions may be discovered. It took much persuasion to overcome their phobias even after all tests for gonorrhea were negative.

Discussion

In retrospect and review the record is not a bad one. The number of patients treated was in proportion to the incidence of disease in general. The number of urologic battle casualties was approximately 2 per cent, as was expected. There was no selection of patients and in the course of events most urologic conditions were encountered to some extent. A fairly large proportion of diseases which troops away from home tend to acquire was encountered. A great deal was learned and much was observed. Many of the battle injuries were of such a nature that their counterpart would rarely be seen in civilian life. On the other hand the management of urinary tract injuries and infections was based on the sound principles demonstrated in civilian practice and carried over to the military. The results are evident in the mortality statistics for this war which show a reduction from the First World War by half in the number of deaths. The urology service in the E. T. O. played its small part in providing the best medical care to the men in the service.

Summary

The experiences of an urologist during three years of specialized service in the Army Medical Corps in the E. T. O. are presented. Special attention is given to psychogenic and mechanic urethritis, and to psychogenic and environmentally conditioned alterations in urination.

FETAL BLACKOUT

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Introduction

"Fetal blackout" is a coined phrase used here because it so amply represents the symptom complex due to anoxia in the fetus, similar to the anoxia experienced by aviators under conditions whereby the oxygen supply is depleted at high altitudes and under conditions of combat where sudden ascensions and turns were necessary. This phenomenon has been well described and sufficiently explained by anoxia.[1] Similarly, the fetus may be depleted of oxygen even to the degree of clinical cyanosis with resulting damage to nervous tissue analogous to that seen in airborne blackout.

Exposition

Experiences of aviation medicine of World War II have made great contributions to medical science in general. Would one ever expect that knowledge gained through the treatment of air casualties could have any bearing on the art of obstetrics? Yet it has. For a long time students of the subject attempted to show that insufficient oxygenation of the fetus in utero and particularly during labor result in dire consequences to the new-born infant. As early as 1843 W. J. Little described a disease of infants which he attributed to asphyxia at the time of delivery. He says:

> " . . . In two cases the birth occurred at the full period of gestation, but owing to the difficulty and slowness of parturition the individuals were born in a state of asphyxia, resuscitation having been obtained at the expiration of two and four hours, through the persevering efforts of the accoucheur."[2]

The disease described in that treatise is cerebral spastic diplegia, commonly known today as Little's disease.

In more recent years others have undertaken to prove this point by studying the effects of anoxia on the histopathology of nervous tissue. They showed that of all the human tissues the central nervous system is most susceptible to permanent irreversible change from anoxia. Furthermore, it has been demonstrated that the fetal nervous tissue is less resistant to injuries than that of an adult. It has been pointed out that anoxemia after delivery of over two minutes' duration will cause serious cerebral alterations. Studies of brain sections show the pathology to be a "localized and generalized atrophy, medullory necrosis, and sometimes necrosis of ganglion cells with homogenization and vacuolation of the cytoplasm, and pyknosis and eccentricity of nuclei, as well as devastation and hemorrhage."[2]

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Some investigators substituted for postmortem studies clinical observations of the effects of sublethal asphyxia on personality, intelligence, and motor activity of the victim. A study of 132 cases of prenatal and postnatal anoxia[3] revealed that the nervous system was damaged sufficiently to effect subsequent behavior at a later age. In addition, the type of behavior varied with the degree of anoxia. Those suffering from a lesser degree of anoxia showed an abnormal hyperactivity and hyperexcitability, while those who experienced a more severe anoxia were apathetic and incompatible with normal living, strain adding to this the liability of the loss of nervous and emotional control. In this latter group tests showed 74 per cent to be of normal intelligence, while 26 per cent were subnormal. The motor damage manifested itself in various grades of neuro-muscular incoordination from tremors and twitching to athetosis and crippling spasticity. The maximum abnormality followed the deepest oxygen deficiency. The cause for this incoordination lies in deficient myelinization of neurons and axons which is interfered with by anoxia.

The following clinical pictures have been observed as unquestioned late effects of asphyxia at birth, two or more of them usually being present in a single case:[4]

1. Mental deficiency
2. Striatal syndromes (congenital chorea, athetosis, or choreo-athetosis).
3. Motor deficiency syndromes (decerebrate rigidity, diplegia, hemiplegia or double hemiplegia).
4. Speech defects (impaired development of the function of speech or dysarthria).
5. Convulsive disorders.
6. Visual symptoms (either optic or oculomotor).
7. Cerebellar symptoms.

Recently, the author surveyed the last seventy patients admitted to the Delaware Colony for the Feebleminded: twenty-three (32.8 per cent) were shown to give a history of complications at birth, five (7.1 per cent) gave definite histories of neonatal asphyxia, and six more (8.5 per cent) gave histories of maternal toxemia, prolonged labor, and symptoms of anoxia such as muscle twitchings, convulsions and generalized rigidity. Thus, 15.6 per cent of this group gave evidence of some form of asphyxia at birth. Although significant, this estimate is relatively low as compared with reports of other investigators. It has been stated that of 500 children with brain defects, 70 per cent gave histories of asphyxia.[5]

We have now accumulated prima facie evidence of the effects of sublethal anoxia on the human nervous system. Those of us who served in areas with great air activity and had the opportunity of seeing the black-out and other oxygen deficiency cases in flyers were impressed by the damage which a deficiency of oxygen over a comparatively short time can produce. Stuttering, loss of memory, lowered intelligence, personality changes, partial blindness, and various motor defects were not uncommon observations. The patients gave a history of loss of consciousness because of some inadequacy of the oxygen apparatus while flying at high altitudes, or underwent repeated "black-outs" during the stress of combat flying.

With such evidence and with the welfare of the fetus in mind the proper management of labor becomes clear. All effort must be made ante-natally and during labor to prevent any depression of the respiratory mechanisms and to furnish an adequate supply of oxygen.

The mechanism whereby the fetus eventually receives oxygen starts with the maternal respiratory system and transcends various levels of the cardiovascular system, placenta and umbilical cord. It is important then to correct any defect at any of these levels. From a practical standpoint this amounts to the early recognition of anemia and cardiac decompensation of the mother, and the recognition of placental disease. The discovery of the latter is synonymous with early diagnosis of pre-eclampsia, syphilis, premature separation of the placenta, and the pre-erythroblastic syndrome. It is to be stressed here, as has been brought out previously,[6] that the appearance of anti-Rh agglutinins in the serum of an Rh negative mother is a manifestation of placental pathology.

These pathological entities may prevent the proper effusions of respiratory gases as well as nutritive substances, enzymes and hormones in the utero-placental circulation. Their prompt recognition and proper management will undoubtedly do much to eliminate intrauterine asphyxia.

Although we do not underestimate the possibility of prolonged sublethal oxygen deficiency of the fetus in the pre-natal period, our greatest concern is with the oxygen supply to the fetus during labor. From this standpoint our prime concern in the first stage of labor is that of the choice of proper analgesic-amnesic drugs.

Sodium pento-barbital, even in small doses, will produce slowing of the respiratory rate.[7] In large doses it will depress the respiratory center directly, reducing the depth and rate, often with irregularities. The decreased oxygen saturation of the arterial blood after pento-barbital may persist for four hours. Furthermore, it has been shown that respiratory depression is markedly accentuated by morphine and the supplementary inhalation of anesthetics. Animal experiments by Barla and Gledhill (1939)[7] proved that the tranquilizing dose of various sedatives required to quiet the struggling movements of dorsally bound rats decreased the minute volume of respiration: morphine by 30 to 45 per cent, and pento-barbital by 50 per cent.

Paraldehyde, although an excellent drug for use during labor, is objectionable for its odor, taste, and need for experienced personnel to administer it properly. However, it is not our intention to detract from the reputation which paraldehyde has as a drug of excellent analgesic-amnesic effect without depression of respiration.

Great hope is derived from the comparatively new (1939) drug "demerol." Chemically and pharmacalogically it resembles both morphine and atropine, a sedative and antispasmodic without respiratory depressive effect. It is generally conceded that with demerol we are nearer to the ideal analgesic method in obstetrics than we ever were before. "Used with scopolamine it is not surpassed by any other drug or method that has to date been demonstrated or is at present in common use."[8]

The problems of the second stage are somewhat different. It is not within the scope of this paper to evaluate the relative merits of the various anesthetics used, except as they effect the oxygenation of the fetus. Naturally, local infiltration, caudal anesthesia, and spinal anesthesia will have no respiratory effect, unless the patient displays an idiosyncrasy to the anesthetic drug, or if a level of the drug above the third cervical segment should be obtained, a phenomenon which should never occur if caudal or intrathecal anesthesia is managed properly. Most anesthetics given in the second stage are of the inhalation type. It is important to remember to give mixtures containing not less than 20 volume per cent of oxygen, which is the concentration in the normal atmosphere. One must be careful not to produce unconsciousness by asphyxia instead of by the anesthetic. This is especially true when nitrous oxide is used.[9] It is better to supplement the nitrous oxide mixture with ether than to decrease the oxygen to below 20 volume per cent.

Another factor of the second stage is the delivery of the baby at the earliest possible moment by a procedure less traumatizing than if spontaneous labor is allowed to progress. "It is becoming increasingly evident that the prolongation of labor is by far the most outstanding single cause of asphyxia of the newborn."[10] Thus, sometimes spontaneous delivery is less preferable than a low forceps-episiotomy operation. A study of 1,048 cases showed that although the asphyxial rate was the same in spontaneous delivery and low forceps-episiotomy procedure, the death rate was somewhat lower with the latter.[10]

Even though the newborn baby may clinically not appear asphyxiated, adequate oxygenation should be assured. The cord should never be clamped until pulsation ceases; meanwhile the mother is being given pure oxygen by inhalation. Oxygen should be given the newborn until automatic regular respiratory movements are well established. The practice of some obstetricians of giving all their newborn oxygen routinely is to be commended.

Conclusion

Unless we assure all fetuses and newborns adequate oxygenation, we may be starting out a child in life with a serious handicap. We can do much to prevent damage. In effect, we will not only be practicing good obstetrics, but also prophylactic psychiatry.

Summary

1. Attention is called to the phenomenon of complete and partial asphyxia which may not produce clinical cyanosis.
2. It is stressed that an insufficient oxygen supply to the fetus may result in nervous manifestations later in life.
3. The management of pregnancy, so as to furnish an adequate oxygen supply to the fetus at all times until it becomes a self-sustaining organism, is outlined.

The author wishes to thank Richard R. Landes, B. Mus. Ed., E. D. M., of the Delaware Colony for his cooperation in investigating the cases reported herein.

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DISSECTING ANEURYSM OF RIGHT COLIC ARTERY*

O. J. Pollak, M. D., Ph. D.,**

Wilmington, Del.

This case is brought to conference for diverse didactic reasons; the diagnostic problem in itself was almost insurmountable.

A 65-year-old colored man was sent to the hospital with the diagnosis of carcinoma of the colon. The family and personal history were non-contributory. On admission, the patient complained of severe colicky pain in the lower right abdomen, and stated that the attacks of pain lasted for about half-an-hour at a time, and that he had had five such spells a day for the past month.

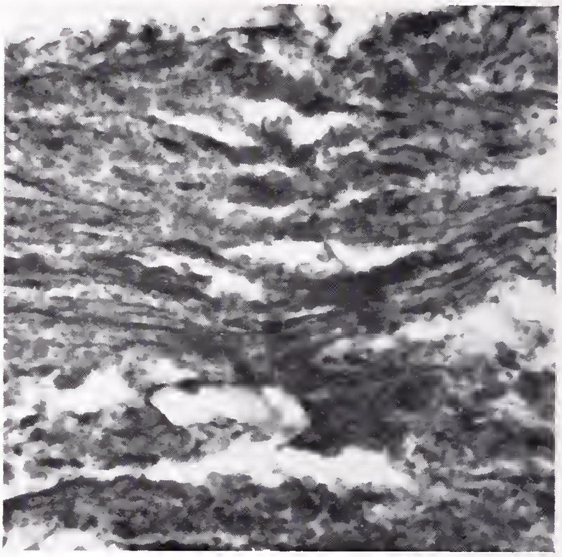

Fig. 1: Blood cells separating elastic fibers of the wall of the right colic artery; Pollak's trichrome stain, x 200.

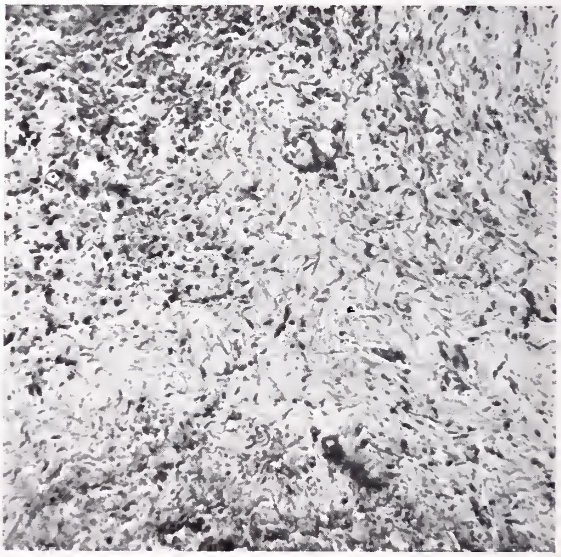

Fig. 2: Organization of the aneurysm, penetration of fibroblasts between layers of blood clots; Hematoxylin-eosin stain, x 200.

On clinical examination the abnormal findings were sluggishly reacting pupils, fibrillation of the heart, a pulse deficit characterized by an apical rate of 160 and a pulse rate of 120 per minute, a liver reaching two fingers below the costal margin, a distended but not tender abdomen with a large palpable, fixed mass in the right lower quadrant, extravasation of urine into the peritoneum and scrotum, and an indurated, enlarged scrotum with a slough and fistula on the left side. On admission, the patient's temperature was 100° F.; respirations, 20/30; blood pressure, 130/40.

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* From a Clinical Pathological Conference of the Pathologist with the Interne Staff.

** Pathologist, Wilmington General Hospital.

The important laboratory findings consisted of an abnormal electrocardiogram indicating left heart preponderance and coronary disease, possibly myocardial infarction; a strongly positive complement fixation reaction and Kahn test for syphilis; a blood urea nitrogen of 64 mg. per 100 ml.; and a blood creatinine of 1.8 mg. per 100 ml. Two days later these values were 86 and 2.3 mg. per 100 ml.; a hemoglobin of 11 gm. or 73.3 per cent; a red cell count of 3,650,000; and a white cell count of 13,900 per cu. mm. of blood; and a hemogram with 10 per cent myelocytes, 13 per cent stab cells, 59 per cent segmented neutrophils, 6 per cent large and 9 per cent small lymphocytes, and 3 per cent monocytes. A flat plate of the abdomen failed to reveal a neoplasm.

After two days of bed rest the fibrillation ceased and the patient was transferred from the medical to the urologic service for suprapubic cystostomy. The extravasation of urine into the perineum and scrotum was due to a stricture of the urethra. After the operation the patient took a downhill course and expired seven days later, on the 13th day of hospitalization.

At necropsy, the pathologic findings were as follows: Ruptured dissecting aneurysm of the right colic artery—a fusiform mass, 14 cm. long and 5 cm. wide and thick, surrounding the right colic artery; on section, several layers of red-brown tissue with pin-head sized calcifications between the blood clots. Beginning necrosis of the ascendant colon—dirty brown to green discoloration and atrophy of the mucosa. Peritoneal hemorrhage—red discoloration of the peritoneum spreading toward the hilus of the right kidney along the abdominal aorta and the right common iliac artery. Atherosclerosis of the aortic valve, the aorta and branches; yellowish white, elevated patches throughout the arterial system. Syphilitic aortitis—parallel, longitudinal scars in the ascending aorta. Multiple encephalomalatiae—minute areas of softening in the base of the pons, left of the midline, and in the left lenticular nucleus. Cystopyelonephritis—surface of kidneys irregular granular, cortex differentiated at the poles only; pelves and ureters widened and containing some brownish fluid; urinary bladder opened anteriorly, its mucosa reddish discolored, especially around the orifice of the right ureter; recent operative incision. Moderate hypertrophy of prostate—organ about twice the normal size, soft, nodular, on section white. Abscess and fistula of scrotum—scrotum increased twice in size and indurated; pus exudes freely from an oval, opening 2-3 cm., which exposes the left testicle; adhesions between the covers of both testicles.

All gross findings were confirmed by examination of tissue sections. The degree of kidney damage was more severe than evident at gross inspection. There was a chronic prostatitis and bilateral testicular atrophy. The aneurysm showed remnants of elastic fibers between blood clots, extensive organization of the outer layers characterized by sheets of connective tissue with capillary blood vessels penetrating into the clot, calcium deposits, and alternating layers of blood with and without old, brown-stained blood pigment.

Discussion

Efforts to prepare the patient for suprapubic cystostomy, which was imperative because of extravasation of urine, diverted the attention of the physicians from the abdominal pain and mass for which the patient was sent to the hospital.

Any abdominal pain provokes a host of questions. One must inquire about localization, intensity, duration, type, provocation and relief of pain, the influence of the various body functions, and external factors. Repeated paroxysms of abdominal pain may be due to coronary arteriosclerosis, subdiaphragmatic angina[1], arteriosclerosis of mesenteric vessels,[2] intra-abdominal apoplexy,[3] aneurysm of the abdominal aorta, its branches or intrahepatic arteries, periarteritis nodosa, tabic crises, plumbism, gall bladder colic, and congestion of the liver.

In our patient tabes could be considered because of positive reactions for lues and because his pupils reacted sluggishly to light. Dyspragia intermittens angiosclerotica[2] is characterized by short attacks of severe colicky pain in the region of the superior mesenteric artery; intra-abdominal apoplexy[3] results in similar paroxysms, a distended, tense abdomen and accelerated pulse; aneurysm of one of the larger abdominal arteries gives similar symptoms. In Ortner's disease[2] there is "dead" meteorism without visible or audible peristalsis of meteoritic loops of the colon. Intra-abdominal apoplexy[3] up to now has been diagnosed only at surgical operation or autopsy. With aneurysm of the abdominal aorta the pain radiates to the scrotum and hypogastrium.

A hard mass in the lower left quadrant may be due to an intestinal tumor first, mostly a carcinoma of the cecum or ascending colon; rarely to a polyp, adenoma or a carcinoid; to regional enteritis, ileus, intussusception, tuberculous or non-tuberculous adhesions, calcified nodes; lymphoma, lymphosarcoma, Hodgkin's disease; actinomycosis, gumma, and finally to an aneurysm.

In our patient, the majority of these conditions could be eliminated because of absence of nausea and vomiting and because of negative roentgenoscopic findings. A gumma which would reach the dimensions of the mass in our man and which would be located in the lower right abdomen has yet to be found. Actinomycosis could not be ruled out with certainty, although the cecum and appendix are usually primarily involved in an extensive process localized in the right lower abdomen. Aneurysm was another diagnostic possibility. Roentgenoscopic examination after oxygen insufflation into the peritoneal cavity or peritoneoscopy would have facilitated the diagnosis; the patient's condition did not allow such elaborate procedures. The flat plate had to be done in the ward.

The two outstanding signs and symptoms were the paroxysms of abdominal pain without nausea or vomiting, and the fixed, hard mass in the right lower abdomen. If one considers the two features simultaneously the possible causes narrow down to arterial aneurysm and to actinomycosis.

In view of the absence of pulsation and bruit I would have been inclined to diagnose the mass as actinomycosis in an untreated syphilitic patient. The cardiac symptoms were consistent with either syphilitic or coronary disease. The affliction of the urinary organs was a separate process, the urethral stricture was possibly due to an old gonorrhoic process. The gross and microscopic post-mortem examinations revealed dissecting aneurysm of the right colic artery as the true diagnosis. The extensive organization and calcification of the vascular cavitation explained the absence of pulsation and bruit.

Summary

An instance of an organized and partly calcified dissecting aneurysm of the right colic artery, which posed a difficult diagnostic problem, is presented.

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MISCELLANEOUS

Re: Birth Certificates

In an effort to have Delaware's birth certificates be more accurate records of the state's citizens, the State Board of Health began last September to issue a new form to parents. This was an unverified, miniature copy of the birth record printed on a form letter and filled in as the doctor filled in the original form that he filed with the State Board of Health. Parents do not receive a birth certificate for their new-born baby unless they O. K. this query form, change anything that the doctor has written incorrectly, and return the form to the State Board of Health in Dover.

In an effort to find out how well the new system was working in Delaware, a representative of the U. S. Census Bureau has now completed a study of some 2,000 Delaware birth certificates filed during the six months' period, and about an equal number of the verifications. Results show that about half of the original certificates that were filed were incomplete or in error, and that on the verification sheets 1,700 additions or corrections were made by the parents.

In the past, birth records have often been filed with the Board's Bureau of Vital Statistics by the doctors delivering the babies without having the child's name filled in or having the parents O. K.-ing the information such as their correct and complete names, their ages or birthplaces or, indeed, the birthplace of the child. This has led to many difficulties when, years later, people come to the Bureau of Vital Statistics expecting to get accurately filled out birth certificates.

A doctor is required by law to file a birth record with the State Board of Health for each baby that he delivers and it is expected that the mother will check the facts on the birth record carefully with the doctor or hospital when she is asked to sign the record verifying the name of the child and other legal items.

The magnitude of keeping birth records of Delaware's new children can be seen from the statistics which show 6,019 babies born in Delaware during 1945, 6,055 during 1944 and about 2,300 during the first 5 months of the current year.

Miss Mildred Spencer as Special Agent, Bureau of Census, heads Delaware's Bureau of Vital Statistics under Dr. Edwin Cameron, State Registrar. She is assisted by a staff of six.

Dr. Cameron points out that an accurate birth certificate is a very important piece of paper, for it makes known who a person is and when and where he was born. The presentation of a birth certificate is the most satisfactory way to prove that an individual is the proper age to go to school, to work, to marry, to hold office, to claim social security benefits. It is the easiest way of proving citizenship upon application for a passport, and the simplest method of showing family relationships when claiming servicemen's dependents' allowances.—Del. St. Bd. Health.

MEDICAL SOCIETY OF DELAWARE

Dover, Tuesday, October 8, 1946

A. M.

10:00 General Session
Invocation

10:05 Address of welcome

10:15 The Symptoms and Signs of Acute Poliomyelitis, Dr. George J. Boines, Wilmington

10:55 Medical Rehabilitation, the Doctor's Responsibility, Dr. Alfred R. Shands, Jr., Wilmington

11:35 Delaware Study of Child Health Services, Dr. John McK. Mitchell, Rosemont, Pa.

P. M.

12:30 Luncheon—Medical Society of Delaware

2:00 General Session

2:00 The Problem of Deafness, Dr. James Marvil, Laurel

2:40 Thrombo-embolic Emergencies, Dr. Thomas M. Durant, Philadelphia

3:20 Clinical Use of Streptomycin, Dr. Harrison F. Flippin, Philadelphia

4:00 Diagnosis of Intra-ocular Tumors, Dr. Arthur J. Bedell, Albany

4:45 Movies—Managing Fresh Wounds of Violence

6:30 Supper

9:00 Meeting of House of Delegates

Wednesday, October 9, 1946

A. M.

9:30 General Session
Report of House of Delegates

9:45 Uretro-intestinal Anastomosis and Vesicle Carcinoma, Dr. Brice S. Vallett, Wilmington

10:25 The Common Problems of the Medical Practitioner and the Specialist in the Diagnosis and Treatment of Gynecologic Disease, Dr. Thaddeus L. Montgomery, Philadelphia

11:05 Continuous Spinal Anaesthesia in Thoracic & Abdominal Surgery, Dr. William T. Lemmon, Philadelphia

11:45 Address of President, Dr. Walter C. Deakyne, Smyrna

12:00 Election of President for 1947

P. M.

12:15 Adjournment

12:30 Luncheon and Auxiliary, guests of Kent County Medical Society

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* *Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60

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+ Editorial +

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VOL. 18 AUGUST, 1946 No. 8

PEDIATRIC SURVEY

The American Academy of Pedriatics is undertaking a study of child health services because of the realization that thorough and systematic planning in the postwar era will be necessary in order to provide children with the care which they need. The Academy feels that the responsibility for such planning rests with physicians, since they, for the most part, must provide the care.

The study is intended to determine what services are available, and to evaluate the quality of these services, and will fall into four categories:

(1) Hospital facilities for the care of children.

(2) Community health services—public and private. This will cover the general health services, such as child health conferences, school health services, child guidance clinics, immunization programs, and public health nursing.

(3) The distribution, qualifications, and activities of professional personnel. These data will be collected from pediatricians, general practitioners, and specialists who care for children.

(4) Pediatric education. This division of the study is not a part of the state program but will be carried out on a national basis by a special committee appointed for the purpose and will evaluate the quantity and quality of training in pediatrics in the 66 medical schools throughout the country.

One of the primary purposes of the survey is to stimulate local groups to see the needs within their own communities and to evaluate existing facilities. The factual data collected will be used by the Academy as a basis for developing recommendations for medical care programs.

The importance of this survey cannot be overestimated. It is a major effort of an organized group of medical men to inquire into its own affairs. It has nothing to do with any of the federal proposals for medical care, such as the Pepper or Wagner Bills, the principles and purposes of which are socialistic and Un-American, and hence are opposed by all decent doctors. So, doctor, when you receive their brief questionnaire, please take the few minutes required to fill it out and return it to the Society—at 908 West street, Wilmington.

CORRECTION

In our July editorial in reference to the Wilmington City Council raising the annual medical license fee from $10 to $50 per year, we stated that this raise would not be effective till June 1947. We were in error. The increase becomes effective in September, 1946. As suggested in the editorial, the New Castle County Medical Society has requested the city fathers to grant a review or hearing on this outrageous tax.

THE HEARINGS ON THE WAGNER-MURRAY-DINGELL BILL

In this issue of The Journal appears the final instalment of the hearings on the Wagner-Murray-Dingell bill, the publication of which has been continued in The Journal since May. The Journal suggested, in reporting the first day of this extraordinary manifestation of the workings of a democracy, that the whole performance had been developed by Messrs. Wagner, Murray, Pepper, Dingell et al.—which includes, of course, their associates, such as employees of the Social Security Board and Michael Davis—as propaganda in behalf of the contemplated legislation. An analysis of the hearings indicates that more persons were heard favorable to the legislation than unfavorable and that many of those unfavorable to the legislation who were of professional or public stature equal to or greater than those who appeared for it were not permitted to have their say. The technics employed in conducting these hearings might well be considered a foretaste of the operations of national compulsory sickness insurance if the Wagner-Murray-Dingell bill should be enacted.

Evidence brought out in the hearings through the astute questioning of Senator Donnell revealed the nature of the little groups marshaled behind the legislation, including the so-called Committee on the Nation's Health, the Committee for Medical Care and the Physicians Forum. Pitiful, indeed, was the exhibition by Dr. Channing Frothingham, whose testimony revealed how he was made a front for the propaganda group assembled by Michael Davis and how little he knew of the actual workings of the organization that he heads. Apparently he was unable to remember the names of his associates; after condemning the writings of some of those opposed to the measure, he indicated that he had never read them.

The hearings served, moreover, to bring to light the problems that the medical profession must face and the persons who use public office to exalt their bureaucracies. There too were the executive secretaries of various pressure groups who presume to speak for considerable numbers of people whose views they have never ascertained.

The incisive questioning by Senator Donnell established definitely that there can be no free choice of physician by patient under any government controlled medical service, that nationalization lends itself to the political degradation of medical practice that it makes the politician the important figure in medical care, that it takes from the physician his right to practice his profession as a scientist and that it is in every sense a "taking over of medicine by the state."

Outstanding also were the comments even by those who opposed the point of view of the American Medical Association—and, incidentally, of the vast majority of American physicians—indicating their recognition of the high scientific status of the medical profession, their respect for physicians as a profession, their esteem for the publications of the American Medical Association and their recognition that it was the physicians themselves, through their organization, that raised the standards of medical education, improved the quality of our hospitals, eliminated quackery, promoted scientific research, participated with public health officials in lowering sickness and death rates and made possible through their magnificent service in the armed forces the winning of the war.

Why Does Medicine Get Kicked Around?

A correspondent writes to ask why the medical profession gets kicked around. He says: "Take some facts cited from an article in the April 13 number of the *Journal of the American Medical Association.* The development of penicillin. The use of blood and blood substitutes in the treatment of shock. The reduction of the death rate of the wounded to 4.5 per cent from 8.26 per cent in World War I. Three cases of tetanus among the immunized personnel in the Army. One case of tetanus among the battle casualties. The effect of DDT in the practical suppression of typhus fever. Influenza and malaria dealt with as never before. Practically one-third of the medical profession volunteering for duty with the armed forces.

"Why does the profession that has trained the men who have accomplished these results allow itself to be kicked around by professional do-gooders and ambitious politicians?

"In the course of hearings held in Washington in April on the National Health Program, Dr. Mountin, of the Public Health Service, stated that medical research and medical education, as well, are properly functions of the Federal government. If this is so, we have then in the making a Federal empire of medicine.

"During the past twenty-five years, the high standards of medical practice which have increasingly characterized American medicine have been the direct result of a calculated program for the continuous education of the young physician. The future programs of medical science, the nature of service that will be rendered or the type of person who will choose the profession of medicine in years to come seem of little concern to Senators Murray and Wagner.

"A profession which has accomplished the advances we have mentioned might be thought justified in its request to be spared from government control. Is there anyone who does not know that, with very few exceptions, when government enters integrity flies out of the window? Politicians would soon want medical patronage for their districts and the qualifications of any doctor would not be 'What do you know?' but 'Whom do you know'?"

He asks whether there is anyone who does not know, that with very few exceptions, when government enters in, integrity flies out of the window. Obviously there are some who do not know it, or will not admit it; or knowing it, do not care. Medicine is a minority group easily kicked around, its aims are specific; it is not an organized pressure group nor, in our opinion, should it be. Its physicians know nearly everyone in the country at some time or other between the cradle and the grave. But the doctors know people professionally, in large measure, not for political purposes.

Medicine is paying a price it seems to us for allowing itself to become fixed—to its hospitals, to its large schools, to its own state and National societies, in a word, to the multitude of tangible, taxable fixtures which have now become so necessary to its functioning as to invite governmental management, control and direction, price fixing, and regulation.

Good medicine suffers in many peoples' minds because of bad distribution, excessive costs to consumers. They think that doctors know medicine but that they do not know how to distribute what they know and can do.

In their opinion the doctors would not be kicked around if medicine were government managed. In some ways this confidence in government efficiency is naive and refreshing. It has refreshed New Zealand no end, and is about to refresh Great Britain. What chance have we in the United States to avoid what other people have invited for themselves? Doctors can only advise, the people decide
Editorial, *N. Y. St. J. M.*, July 15, 1946.

DOCTORS TELL HOW SHELL FRAGMENT WAS REMOVED FROM SOLDIER'S HEART

Two doctors in the Army Medical Corps report the successful removal of a shell fragment from the heart of a 23-year-old American soldier in an article appearing in the current issue of the *Archives of Surgery*, published by the American Medical Association.

The authors—Lieut. Col. William R. Schaefer and Capt. Victor P. Satinsky, Medical Corps, Army of the United States—say that the soldier was wounded June 24, 1944, near Cherbourg, France, when a mortar fragment "stung him through his back." X-ray films failed to reveal the shell fragment because of the collection of blood in the chest cavity.

The foreign body was located, however, by fluoroscopic examination which revealed that the object moved with the beat of the heart. Surgical exploration showed the fragment had cut through the lung and penetrated the heart. A small incision was made in the left chamber of the heart and the fragment was grasped and removed by clamps. The patient was given transfusions and treated with oxygen, sulfadiazine and penicillin.

The authors state that "six weeks following operation, the patient was permitted out of bed and graduated exercises were begun. Special exercises were instituted early to assist in the reexpansion of the lung (which was collapsed), to prevent deformity and to aid in the development of the thoracic (chest) cage. These exercises were carried out regularly four times daily. . . . Four months after operation, the patient is in excellent condition."

BOOK REVIEWS

A Textbook of Gynecology. By Arthur Hale Curtis, M. D., Professor and Chairman of the Department of Obstetrics and Gynecology, Northwestern University Medical School. Fifth edition. Pp. 755, with 455 illustrations, chiefly by Tom Jones, including 36 in color. Cloth. Price, $8.00. Philadelphia: W. B. Saunders Company, 1946.

This deservedly popular book has been appearing in a new edition regularly every few years since 1930. This present edition shows considerable revision, with only a few pages added. The most important additions are in the chapter on ovarian tumors. Special stress is laid on the endocrine pictures in gynecology, a rapidly enlarging phase; and on penicillin in the treatment of gonorrhea. New subjects are also found in the chapter on tumors of the uterus. The illustrations are excellent; the ones in color are both numerous and beautiful.

Curtis' book is still one of the most outstanding texts in its field.

Peritheral Vascular Diseases. By Edgar V. Allen, M. D., and Nelson W. Barker, M. D., and Edgar A. Hines, Jr., M. D., Associate Professors of Medicine Mayo Foundation, Graduate School, Univ. Minnesota; with Associates in Mayo Clinic and Mayo Foundation. Pp. 871 with 386 illustrations, 7 in color. Cloth. Price, $10.00. Philadelphia: W. B. Saunders Company, 1946.

If ever there was a timely book, this is it. As the three major authors say, the "extensiveness of the unknown" is impressive. These three, with the aid of 11 other contributors, have crystallized the experience of the Mayo Clinic and produced a book that may well represent the beginning of a new era in the research of a field that hitherto has been comparatively static for these many years.

Their idea that "peritheral" means all vessels distal to the heart is sound, as is their inclusion of the lymph vessels.

With thousands of veterans returning with frost bite or trench foot, for instance, their discussion is both valuable and helpful, despite the absence of definitive therapy. And as to the age-old problem of varicose veins, etc., they fortunately put the soft pedal on such far-fetched and unphysiological procedures as lumbar sympathectomy, which they tried out and abandoned.

What medical man today, if in active practice, can afford to be without the knowledge epitomized in this excellent volume?

Women In Industry—Their Health and Efficiency. Issued under the auspices of the Division of Medical Sciences and the Division of Engineering and Industrial Research of the National Research Council. Prepared in the Army Industrial Hygiene Laboratory by Anna M. Baetjer, Sc. D., Assistant Professor of Physiological Hygiene, School of Hygiene and Public Health, Johns Hopkins University. Pp. 345. Cloth. Price, $4.00. Philadelphia: W. B. Saunders Company, 1946.

The title of this volume describes the volume. What it connotes, but does not specifically denote is, that woman-power has a definite place in the economics of today; that it is here to stay; and that its sensible management depends upon a sympathetic and scientific understanding of woman's physical and mental attributes. But what mere layman (the usual employer) knows enough about women to employ and supervise them with any real degree of satisfaction to either employer or employee? The usual practice has been to "hire 'em and fire 'em," according to their ability to produce, as compared to men employees. This informative little book should appeal to labor and management rather than to the medical profession.

Here is a really worth-while book on a subject about which not too much has been written that is really worth-while; and as such we recommend it highly.

Modern Drug Encyclopedia and Therapeutic Index. Edited by Alexander G. Gutman, M. D., Assistant Professor of Medicine, Columbia University. Third edition. Cloth. Pp. 1157. Price, $10.00. New York: Yorke Publishing Company, 1946.

When we reviewed the second edition of the work in January, 1941, we said it "fills a definite need." We reiterate that statement. This work, the only one of its kind, includes all the so-called "ethical proprietaries," i. e., those that are advertised only to the profession. The claptrap that is so unctiously dished out to the laity direct cannot "make" Gutmans' volume.

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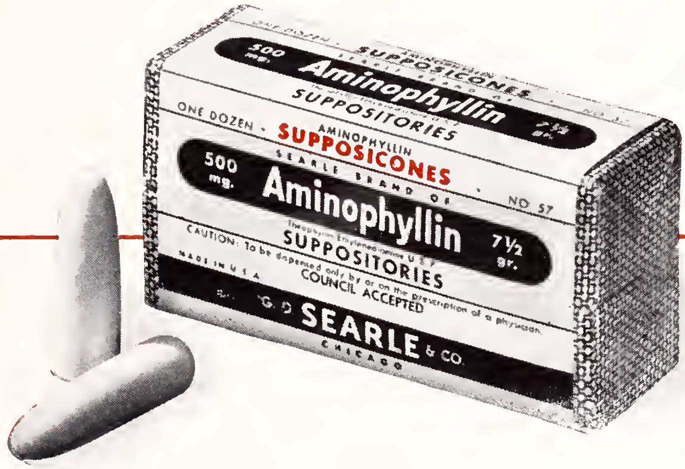

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Feinberg, S. M.: Allergy in Practice,
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*Hinsie, Leland E.: The Person in the Body, an Introduction to Psychosomatic Medicine, New York, W.W. Norton & Co., 1945, p. 223.

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WOLLGAST, C. F.: *The Clinical Use of Penicillin: A Report of 115 Cases Treated in an Army Hospital, Texas State J. M. 40:225 (Aug.) 1944.* **FARQUHARSON R. F.; GREEY, P., & TOWNSEND, S. R.:** *Results of Penicillin Therapy: A Report for the Joint Services Penicillin Committee, Canad. M. A. J. 53:1 (July) 1945.*

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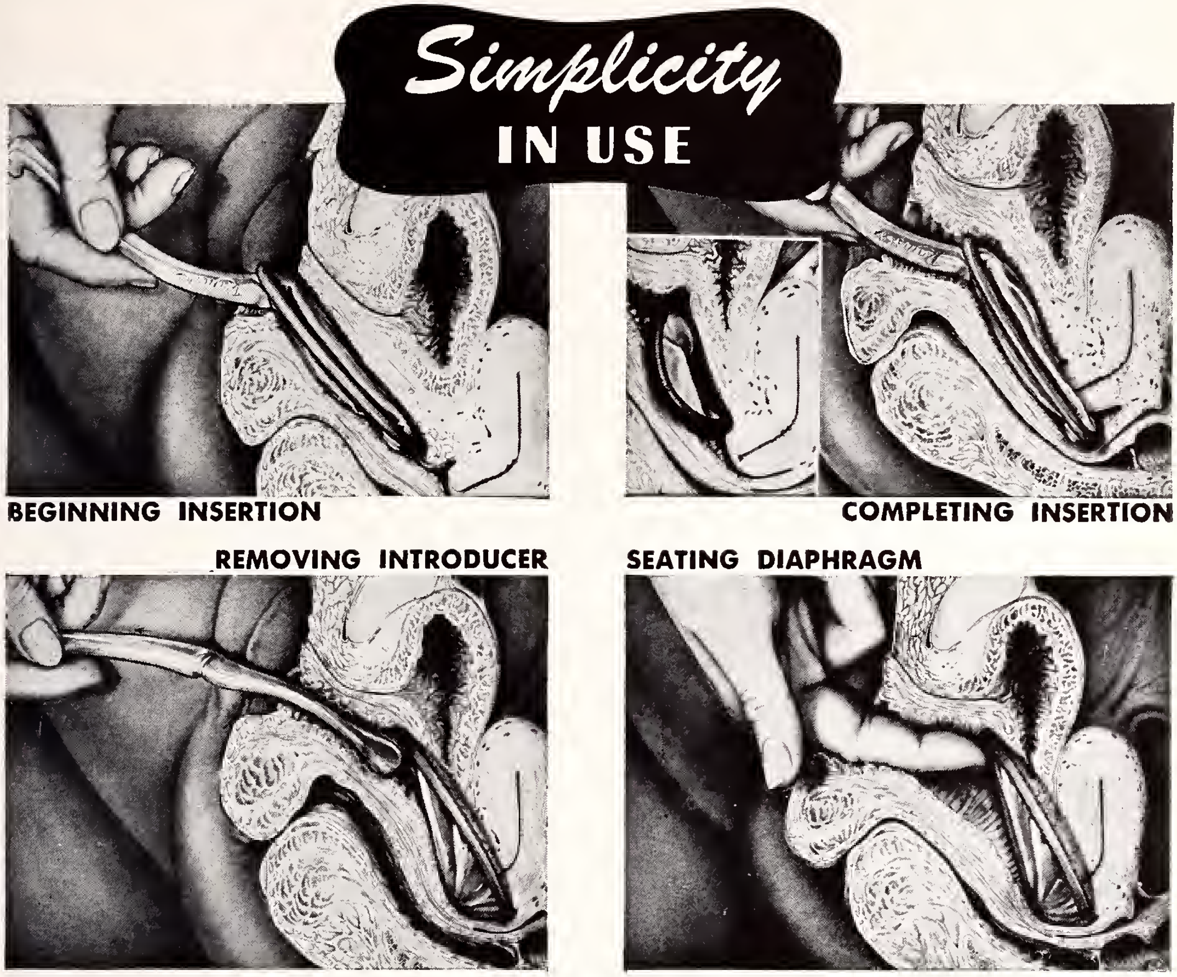

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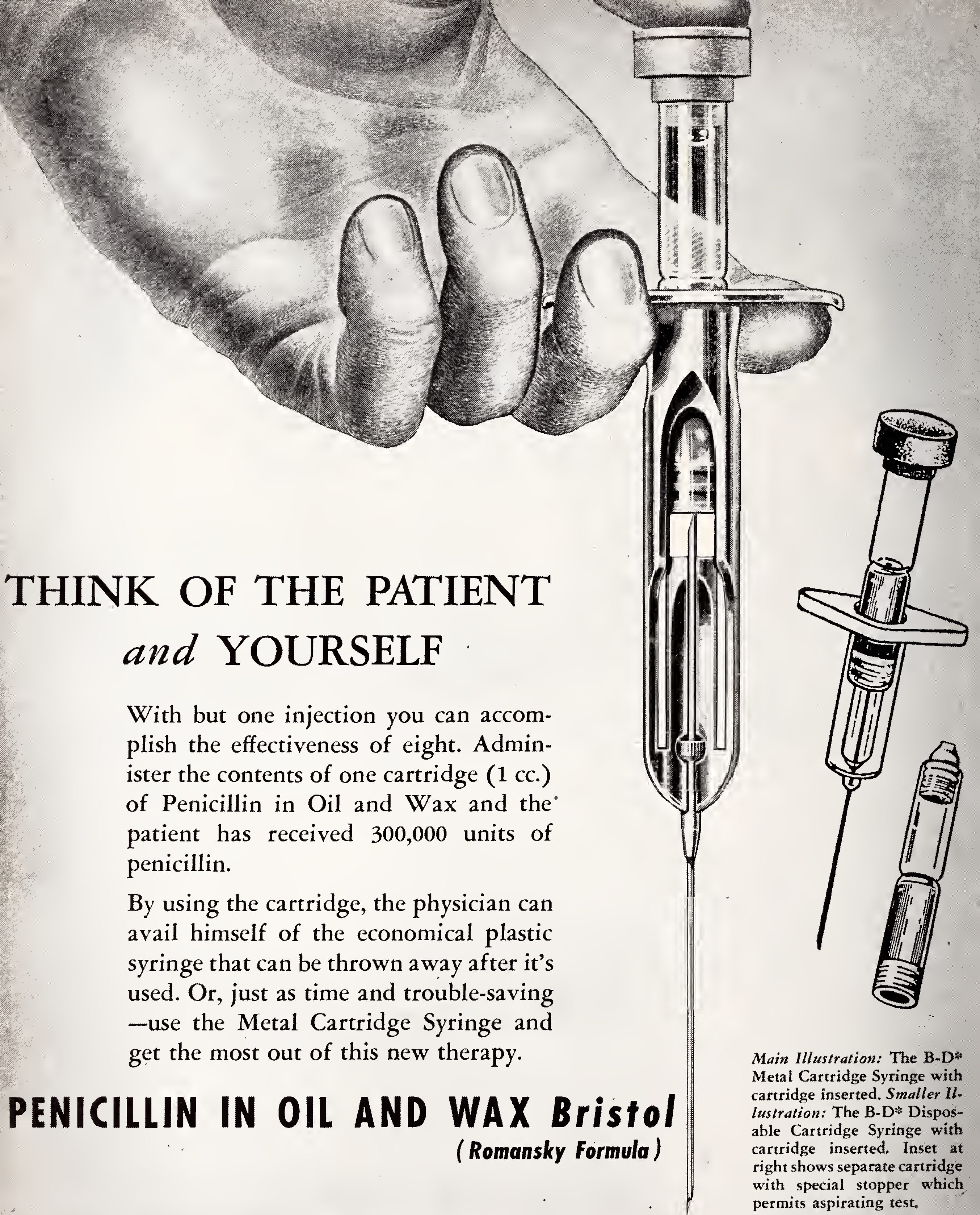
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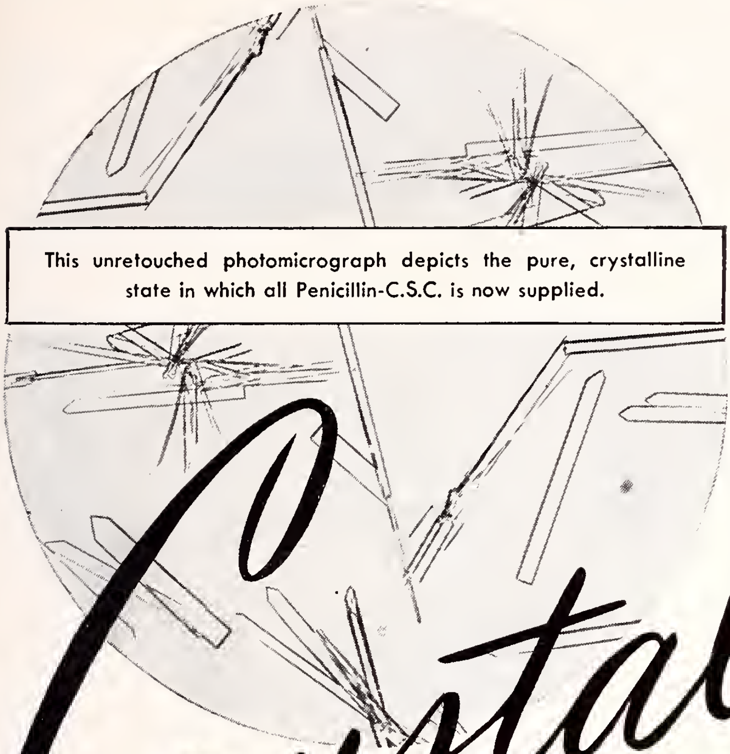

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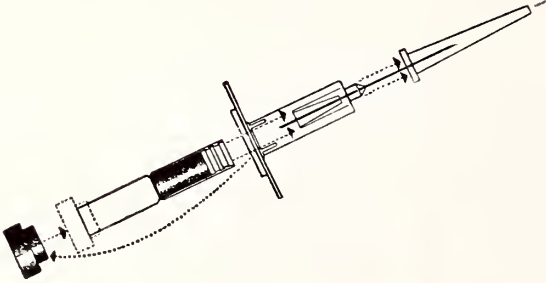

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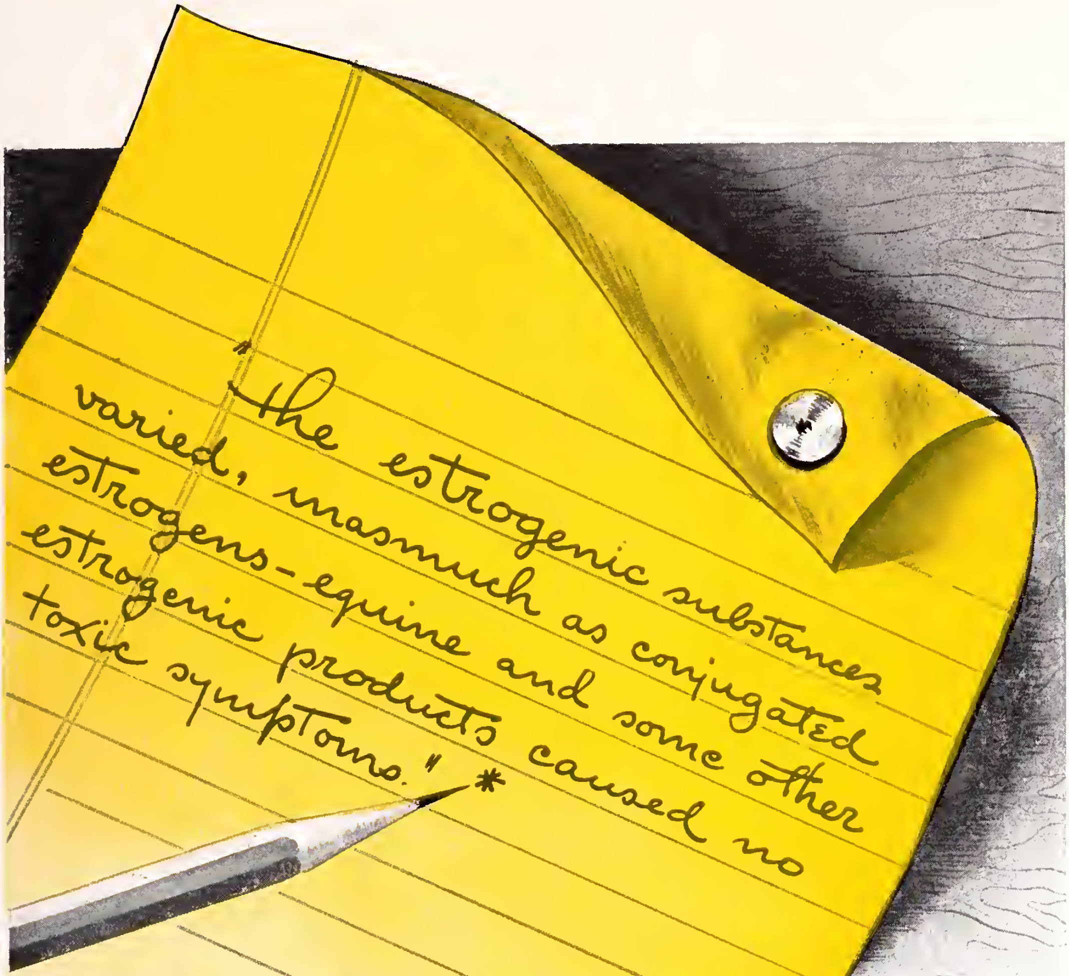
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*Harding, F. E.: Am. J. Obst. & Gynec., 51:660 (May) 1946

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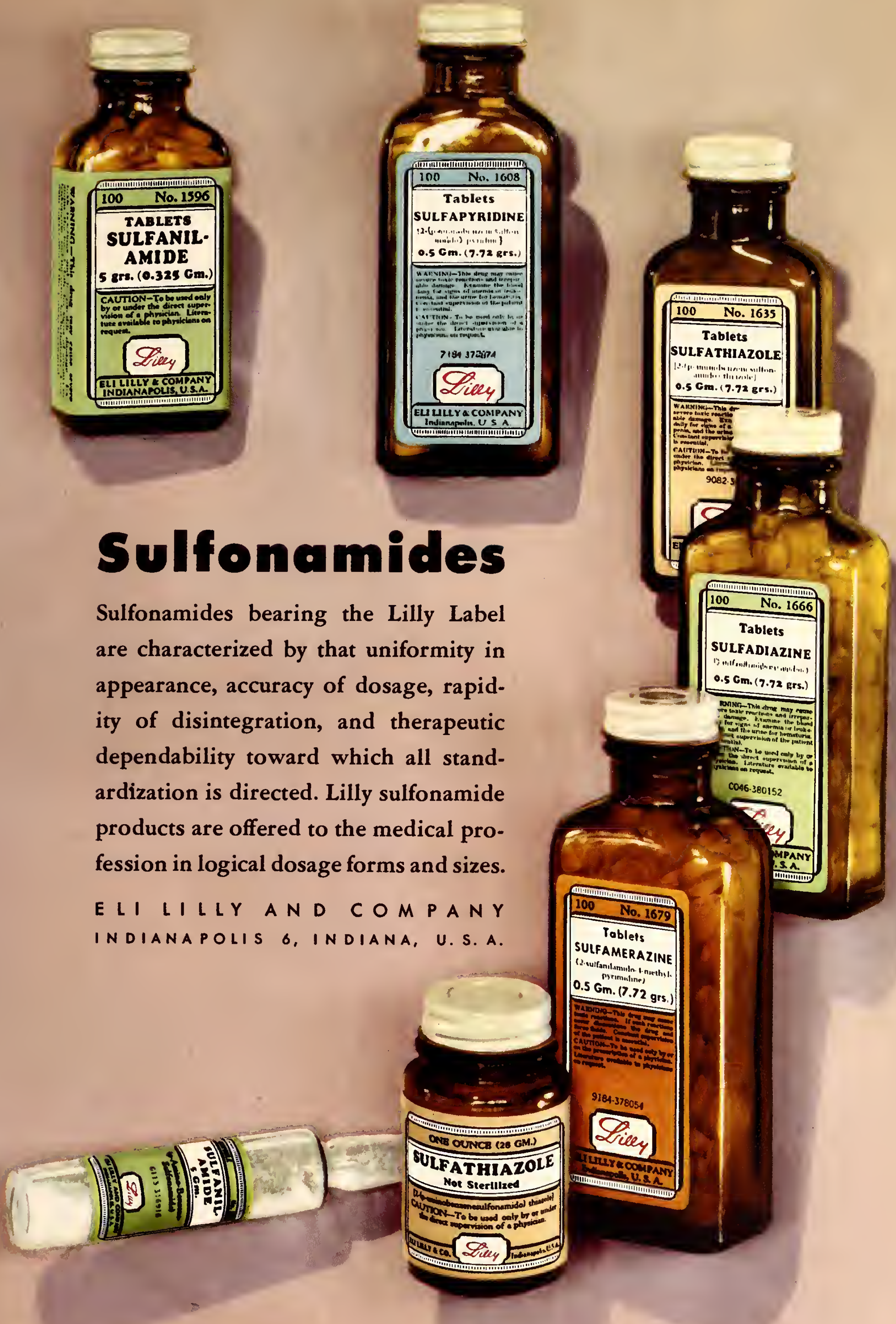

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DELAWARE STATE MEDICAL JOURNAL

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INCREASE IN AGE GROUP IN TUBERCULOSIS

LAWRENCE D. PHILLIPS, M. D.,*
Marshallton, Del.

During the past several months it was felt that the Sanatorium was admitting a higher percentage of patients in the upper age brackets in comparison to previous years, and it was thought it might be of interest to check the previous years with the current one.

The age of 50 years and over was selected as the basis for this tabulation. Possibly, the selection of this age group may have been influenced by the expression attributed to Sir William Olser years ago. In an endeavor to have the figures accurate it was necessary to ascertain the number and percentage of Delaware residents for each year over 50 years of age in comparison to the total population. We are indebted to Mr. Cecil A. Marshall, statistician of the State Board of Health, for the total population and the total number of residents who are over this selected age group, and also for the Chart. It is known that there is an increasingly higher percentage each year of people in the upper age brackets.

The years 1926 to 1946 are used, since in 1926 the state assumed the responsibility of operating the Sanatorium and placed it under the State Board of Health, from which date the figures are reliable. There have been two extra months (July and August) added to the fiscal year of 1946.

All non-tuberculous cases have been excluded as regards admissions and discharges.

One will note from Table 1 that there was

TABLE I

Fiscal Year Ending June	Total Delaware Population	Delaware Population 50 Yrs. & Over	% Population 50 Yrs. & Over	Total Number Tuberculous Admissions	Total Number Tuberculous Admissions 50 Yrs. & Over	% Admissions 50 Yrs. & Over	Difference in % of Population 50 Yrs. & Over & Tuberculous Admissions
1926	232,224	45,256	19.5	77	9	11.7	—7.8
1927	233,762	46,046	19.7	77	6	7.8	—11.9
1928	235,299	46,837	19.5	73	10	13.7	—5.8
1929	236,836	47,628	20.1	80	10	12.5	—7.6
1930	238,380	48,419	20.2	97	14	14.4	—5.8
1931	241,188	49,410	20.4	81	11	13.6	—6.8
1932	244,002	50,402	20.7	76	6	7.9	—12.8
1933	246,813	51,394	20.8	59	8	13.6	—7.2
1934	249,627	52,386	21.0	56	3	5.4	—15.6
1935	252,440	53,378	21.1	75	6	8.0	—13.1
1936	255,252	54,369	21.3	53	6	11.3	—10.0
1937	258,063	55,361	21.6	102	8	7.8	—13.8
1938	260,877	56,353	21.6	79	16	20.3	—1.3
1939	263,688	57,345	21.7	105	11	10.5	—11.2
1940	266,505	58,337	21.9	97	16	16.5	—5.4
1941	269,313	59,328	22.0	112	14	12.5	—9.5
1942	272,127	60,320	22.2	117	18	15.4	—6.8
1943	274,938	61,312	22.3	103	14	13.6	—8.7
1944	277,752	62,304	22.4	104	20	19.2	—3.2
1945	280,565	63,296	22.6	99	21	22.2	—0.4
1946	283,377	64,287	22.6	120	29	24.2	+1.6

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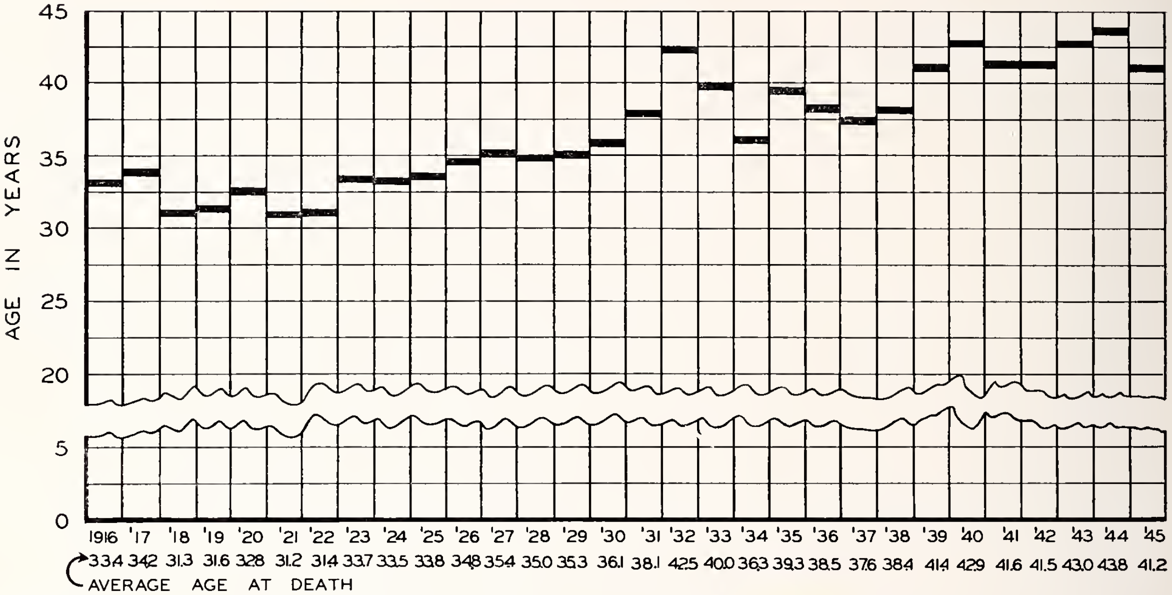
* Superintendent. Brandywine Sanatorium.

AVERAGE AGE AT DEATH FROM TUBERCULOSIS
DELAWARE



considerable fluctuation for each year, but always on the minus side until 1946. There was a higher percentage of admissions under the 50 years of age group as compared with the general population. However, the fiscal year 1946 showed 1.6% more admissions than the percentage of the general population in the 50 years of age group and over, while the year 1945 showed the next closest to the 1946 figures.

Chart 1 shows the average age at death from tuberculosis in the entire state. One will note from the year 1916 through 1945 the average age has risen from 33.4 years to 41.2 years, or a rise of 7.8 years in the course of 30 years. The highest was 43.8 years in 1944, or a rise of 10.4 years in the course of 29 years. From this chart one can also see why the Sanatorium is admitting more patients in the higher age brackets.

In comparison with Table 1 from the year 1926 through 1945 the rise has been 6.4 years, or taking the year 1944, the rise was 9 years. It is to be surmised that the tabulations for the state in 1947 will show the greatest rise in the age group brackets to date.

AN INTEGRATED APPROACH TO CEREBRAL PALSY

EUNICE USHER, M. S.,*
Dover, Del.

All over the country people are striving to make it possible for individuals with cerebral palsy to develop their abilities and to become integral members of their communities. The members of our staff (physicians, public health nurses, speech correctionist, and medical social consultant) responsible for the services to crippled children, have attempted to attain this goal.

This is a report of the 54 children with cerebral palsy known to the medical social consultant from September, 1943, through July, 1946. This paper will be limited to the social aspects of the problem and try to show how the child and his family adjust to an illness which can be improved rather than cured. These cases were referred to the consultant by the cerebral palsy consultant, the orthopedic consulting surgeons, the public health nurses, and school officials. Each case was reviewed in the local health unit by the nursing supervisor, the public health nurse, and the medical social consultant before a plan was made. The responsibility for carrying the case was divided according to the type of problem and the available resources. The doctors and speech correctionist also participated in this planning to ensure cooperative work. The following social agencies helped in carrying out the plans: the Mental Hygiene Clinic, Children's Bureau of Delaware, the Y. W. C. A., Children's Beach House, and Boys' Club. Several local service clubs and church groups contributed funds to enable four boys and one girl to go to camp.

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* Medical Social Consultant, Delaware State Board of Health.

In order to obtain a picture of the situation the following questions were considered: How did the parents feel about their child? Did they feel responsible for their child's illness? Were the parents congenial and did they enter into the life of their community? How did the parents carry out the doctors' recommendations? How did the child get along with his family and friends? What was the attitude of the particular community to people with physical limitations? What are the strengths of the child and the family? Does the community have any resources?

The Mental Hygiene Clinic has tested 30 of these children. The results of these tests have served as a guide in working with the youngsters. Thirteen children were found to be of average intelligence, four were of borderline intelligence, and thirteen were mentally deficient. Since there are a total of 82 children under the care of our program, no final conclusions can be drawn from this sample.

Since schooling is one of the major needs of these children the following chart was made to show how their school progress compares with that of physically normal children entering school at six years of age and being promoted regularly. Out of the 28 children in school, 17 are retarded in school. The causes of the retardation are as follows: no schooling available when school age reached, 5; individual or remedial work needed because of medical problem, 6; poor social environment, 4; no transportation, 1; and unknown, 1. There are two boys of school age for whom there is no schooling available.

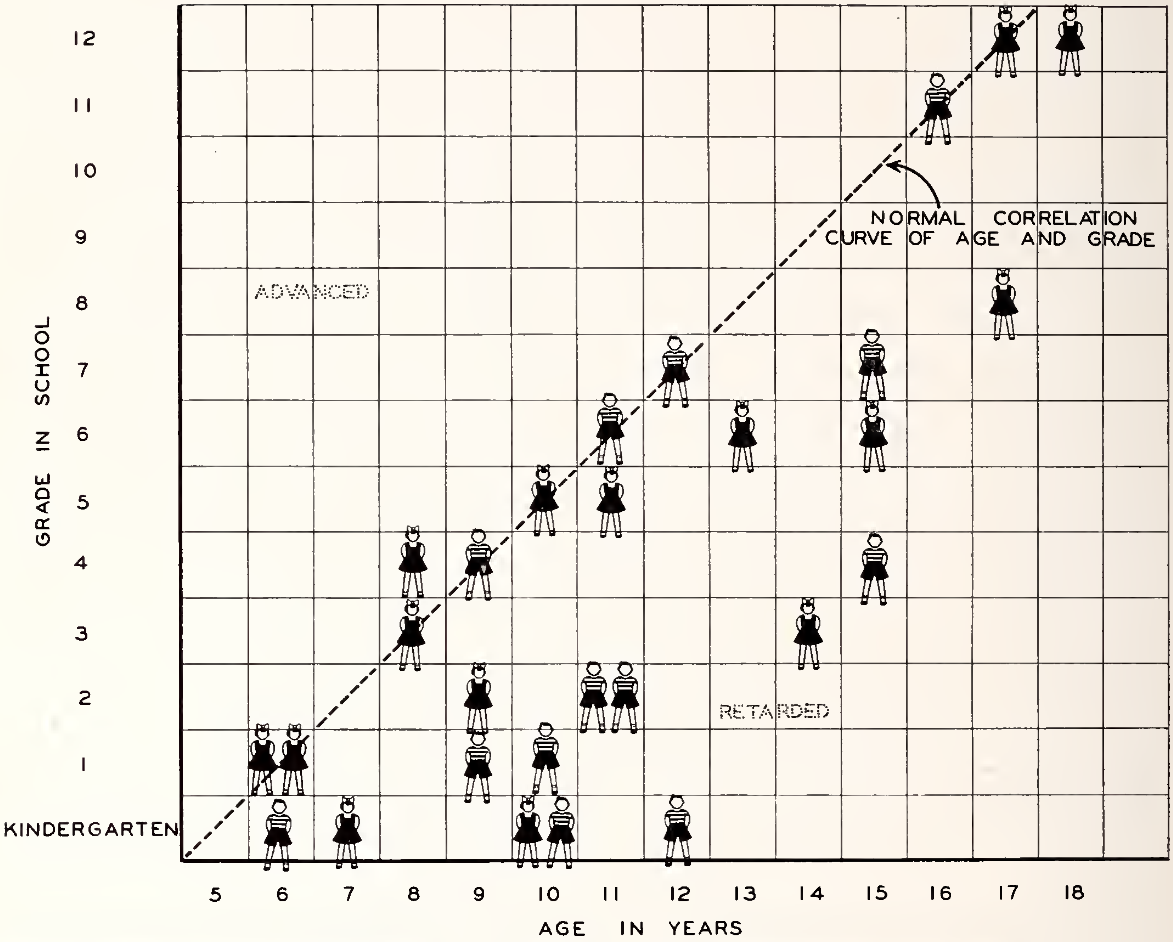
Looking back one can see that movement has been made in 41 cases out of the 52, but at a rate which would not be obvious from day to day. It takes time and courage for the parents to tell us how they really feel and why they feed or dress Tommy. They are trying to make up to him what he has lost and forget for the moment that their attitude will increase his dependence and difference from his friends. Gradually as Tommy is allowed to dress himself, to learn to eat even if food spills on the table, and to play outdoors, the parent becomes encouraged and this in turn affects the child. Frequently the parents have forgotten that they too must live and have fun. They wonder what will happen to Tommy if a stranger stays with him or how he will behave if they take him out. Will people ask embarrassing questions? Then again the mother worries because Tommy wants to play by himself or because Ann has to be the center of attention. These are some of the problems which we are asked to help solve.

Betsy Barton in "And Now to Live Again" says that we must make the most of whatever a child can do in order to start the wheels of progress moving. She became encouraged by her ability to do deep breathing and stomach exercises. These are the clues for which we must search. We feel that there are no general rules to follow but that each child and family must be considered individually. We feel that the members of the team need to move slowly without pushing the families, as real progress can only come from a change within the child and his family.

For example, one young couple was discouraged as their older daughter, whose diagnosis is right spastic hemiplegia, developed more slowly than her younger brother. They realized no one could cure her but began to doubt that she would improve. The parents needed to know more about the causes of cerebral palsy and were relieved to know it is not inherited. They were glad to know why their daughter should not use her right hand and could see why it would take time for her to train her left hand to do the work when she was naturally right handed. The mother read *The Spastic Review*, a magazine by spastics for spastics, and learned how other parents and youngsters reacted to this illness. Then the daughter began to improve and her whole attitude changed, which was in turn reflected in the family group.

Tom demonstrated these children's need for the security of their parents, when, homesick, he insisted upon leaving a special school for

CORRELATION OF AGE AND SCHOOL GRADE OF 28 CHILDREN WITH CEREBRAL PALSY



those with cerebral palsy. At this time last year he had no friends of his own age and had no ambition to try to walk. Tom was satisfied to live in his wheel chair and appeared unconcerned about his uncoordinated and continual movements of his arms and legs. Fortunately, the local public school was willing to have him come to school and the other pupils accepted him quickly. Tom was included in all their games. Someone pushed his wheel chair when he was it in tag. Soon Tom's attitude changed and he wanted help. At first he decided to improve his speech and worked with the speech correctionist. Now he is also trying to learn balance, the first step in walking. Tom has proved to himself that he has a place in the world and knows that his parents believe he will succeed.

Sue, whose diagnosis is cerebral palsy, athetoid quadreplegia, decided that she was not bright or able to compete with the girls in the neighborhood, as at twelve years of age her schooling had just started with a tutor. She walked awkwardly and had a hard time talking. Sue had not been able to take her first communion which added to her difficulties. When the Sisters understood the situation they were glad to give her the necessary catechism lessons. She went to school for this, which made her feel more like her sister. She walked down the aisle with her mother to make her first communion. A local social agency arranged for Sue to join one of their clubs. The group experience gave her the courage to go to a summer day camp and later to school. This last summer she went to another summer day camp which was away from home. Here she learned that she could eat by herself and became even more independent. Each step forward makes her work harder to coordinate her arms and legs, and encourages her to practice her speech lesson.

Ann's description of her encounter with a one-legged veteran illustrated the supersensitivity of physically limited children. Ann, whose diagnosis is cerebral palsy, athetoid type, was sixteen and very self-conscious about her awkward gait and worried about her inability to join her schoolmates at the corner drugstore for a "coke." One morning when she was walking along with her mother she tripped over a veteran's crutch and nearly fell. The veteran was surprised at her smile and remark, "I didn't fall, and I'm all right." Ann said to us: "Mother looked at him that way." He said to Ann's mother: "Lady, I'm all right." Everyone else that morning had been rude and critical of his walking. The veteran invited Ann and her mother to have a milk shake. Ann wondered how he would hold the door open for them and get through himself but decided to say nothing. Ann warned her mother not to look back as they entered the store. After they were seated Ann cast her eye about and was relieved to see that no one was paying attention to them. Ann soon found herself telling the veteran all about her illness and ended by saying that she was better off than he since she had never been different and had nothing to relearn. Needless to say this encounter boosted Ann's morale.

The importance of the attitude of those caring for children was well shown by John's behavior. John, a spastic diplegia, was spoilt and demanding. He refused to eat, expected to be dressed, and even asked to be carried around at times. At six years of age he was running his family and answering questions with a perpetual no. Since John's mother was tired because of some family problems, she felt unable to manage John at home. Finally a plan was worked out for John to go to Children's Beach House. When John arrived, he tried in every way he knew to get attention, but when he failed he decided to eat. From then on he began to change slowly. Now, after 3 months away from home, he is independent, takes care of himself, and even forgets to say no, except when his mother visits him. John's mother needs help in understanding her son's change in behavior if he is to continue this new pattern when he returns home.

These few examples do show the need for considering each child and family from a total point of view. There is a need to set a goal for the child which can be attained and is in keeping with his abilities. These children need school experience, friends and security in just the same way as do the physically normal children. These children want a chance to develop their own particular abilities to their fullest extent rather than sympathy. Some of them will need special medical care, extra tutoring, remedial work, and group activities. The need for an awareness of their supersensitive feelings has been shown, in order to prevent the development of feelings of inferiority, perhaps specialized group work for children with physical limitations would be profitable. The children would gain self-confidence through their efforts to help each other.

Thus it is seen that there is no magic word which can be said to make it possible for these children to live as rich a life as their interests and abilities allow them, but the child, his parents, the community, and the medical team must work together to give them the proper support if the children are to become contributing members of society.

REHABILITATION OF SPEECH FOR CRIPPLED CHILDREN

Marian L. Gilmore, M. A.,*
Dover, Del.

"Language is a poor thing. You fill your lungs with wind and shake a little slit in your throat, and make mouths, and that shakes the air; and the air shakes a pair of little drums in my head—a very complicated arrangement, with lots of bones behind—and my brain seizes your meaning in the rough. What a roundabout way, and what a waste of time!"[1] True, but if it seems such a complicated process for the average normal person, how very difficult and intricate it becomes for the person whose speech patterns deviate from the normal.

---

* Speech Correctionist, Delaware State Board of Health.

(1) DuMaurier: Peter Ibbetson.

The White House Conference on Child Health and Protection, reported in 1931, indicated that "there are in America 1,000,000 school children between the ages of five and eighteen so defective in speech as to require remedial treatment and training."[2] This estimate is the result of a survey of 48 representative American cities and it was regarded as a very conservative estimate. Since it included only the children in public schools, it did not consider children so defective as not to be enrolled in schools, or those below or above the ages covered by our system of compulsory education.

Further appalling data was released in 1935. "At New York University the examination for the freshmen entering in September of 1935 showed that 94% of all students examined required clinical aid (in speech)."[3] If, then, there is such a lack of adequate speech habits on the part of this selected group, what is the situation among the average students who make up the bulk of our future citizenry?

Pioneers in setting up programs of speech rehabilitation in schools were such countries as Germany, Austria, Hungary, Belgium, and Switzerland. There are now, however, growing programs of the same sort in America. In the educational program, 85% of the speech deviates yield to standard techniques and procedures of correction.

Even if the schools were able to afford the equipment and personnel to handle just the number of cases that would respond positively to educational procedures, there are still a large group of children whose problems in speech are so definitely medical and surgical that their solution demands the combined efforts of speech clinicians and scientifically trained specialists. These include cases of cleft palate, cerebral palsy, aphasia, voice problems which involve the removal of tonsils, adenoids or vocal nodules, voice problems arising from impaired breathing or laryngeal paralysis. These constitute the major difficulties which arise, but there are others.

Speech is a learned function, not an innate one. Medical and surgical procedures may be used to eradicate the cause of the speech disorder, but special speech training should follow, for these methods usually only make speech learning possible. They do not, necessarily, correct the speech defect. In the majority of cases, if the incorrect habit of speaking has already been developed, this same habit will continue after the basic structural or organic deficiency has been corrected. The speech clinician finds the problem one of destroying old habits and building new ones.

When this matter of speaking seems simplest it is still an intricately involved process. Because it is infinitely more difficult for a child who is also physically handicapped in some other way, the Delaware State Board of Health saw fit to introduce a program of speech correction which could benefit those crippled children who were unable to express themselves adequately because of speech deficiencies. This program was instituted in February of this year. Any child registered under the Crippled Children's Program was given an appointment with the speech correctionist. This child was then seen once a week for a period of a half hour of training. About fifteen minutes was spent with the parent in order to clarify the methods used and to indicate what steps might be taken by the parent during the coming week. If the child was able to attend school, he was seen at the school and the cooperation of the teacher, as well as that of the parent, was secured. These children were referred by physicians, nurses or the medical social consultant on the staff of the State Board of Health. The program is a growing one, and the prognosis for 75% to 80% of the children is favorable.

It has been encouraging and stimulating, therefore, to find another organization eager to help a child who is unable to speak for aid for himself and whose symptoms of inadequate speech might not seem so dramatically obvious as his other defects are. The child is still in need of our most universal mode of communication and it should not be denied him. The program of speech correction in Delaware, as set up by the State Board of Health, is designed for just this purpose

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(2) White House Conference on Child Health and Protection, p. 353.

(3) Raubicheck: How to Teach Good Speech in the Elementary Schools, p. 8.

and will continue to diagnose and help as many children as possible each year.

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CHILD HEALTH — THE BRIGHTEST CHAPTER

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Dover, Del.

It is remarkable that within the past few decades we have achieved such rapid strides in the prevention and postponement of mortality among our people. It is especially true among youth that the labors of medical practitioners and public health administrators are so pronounced and gratifying. Our economic and social gains directed toward increasing our standard of living are also reflected in the reduction of disease whose cause and treatment are known.

For comparative purposes we have selected two years (1916 and 1944) of mortality in Delaware as it occurred by age groups. These two years are the earliest and latest for which we have detailed mortality statistics available, and they are representative of two periods, with the qualification that in this state there was a poliomyelitis epidemic in 1916 and in 1944, there being on record 38 deaths in 1916 of which 36 were under 19 years of age, and in 1944 there were 6 deaths, 5 of which were under 19 years of age.

TABLE I

Change in the Mortality by Age Groups Delaware 1916 to 1944

Age Group	1916	1944	Change
—1 yr.	669	289	—380
1	129	41	— 88
2	61	17	— 44
3	31	6	— 25
4	31	7	— 24
Under 5 yrs.	921	360	—561
5- 9	75	29	— 46
10 19	153	57	— 96
20 29	263	123	—140
30 39	294	165	—129
40-49	321	275	— 46
50-59	422	457	+ 35
60 69	542	692	+150
70-79	477	738	+261
80 89	228	441	+213
90-99	34	52	+ 18
100+	3	5	+ 2
Unk.	10	9	— 1
Total	3743	3403	—340

From Table I we can quite readily realize that a brighter chapter in the history of child health has been written. The reduction in the mortality of children under 19 is such that at the end of the 28 years ending in 1944 it is only 39% of what it was in 1916. The change in the rate of infant mortality from 131 per 1,000 live births to 47 is a compensating thought for our efforts in the widespread education of mothers in the care and feeding of infants. The saving of infants from intestinal upsets has played a large part in controlling infant mortality. In a population under 1 year in 1916 of 5,118 there were 159 deaths from this cause, while in 1944 in a population of 6,037 under 1 year we had 47. This, in the past the greatest enemy of infant life, has been brought down to one-quarter its previous rate of occurrence, and in a war period when people suffer numerous economic, social, and environmental disruptions. For this credit must be given to modern methods of preserving food, namely refrigeration, pasteurization of milk, purification of water, as well as education of parents in regard to the care of infants. The lessened mortality from prematurity has had a significant effect, but not as great as that from the increased control of communicable diseases, pneumonia being dominant among these.

Among our children pneumonia mortality has been reduced to less than one-third of the previous death risk. The general mortality from this cause has fallen from 140 per 100,000 population in 1916 to 52 in 1944. The discoveries in chemotherapy in the past few years and their more extensive use has contributed to this decline. We may look to further reduction as these developments continue. For the disease listed in Table II a marked reduction is noted in all.

The mortality from these combined causes has been reduced from 555 per year to 134 in a population group that increased some 5,000 in numbers (group -1 to 19 yrs.). Diphtheria in this state has claimed an average of 26

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TABLE II

Mortality From Specific Diseases in the Age Group — 1 to 19 Years; Delaware: 1916 and 1944

	1916	1944
Diphtheria	16	0
Whooping Cough	18	7
Tuberculosis	81	10
Measles	27	4
Heart	40	7
Pneumonia	167	46
Diarrhea & Enteritis	206	60
ALL	555	134

lives per year from 1910-19; an average of 19 per year from 1920-29; an average of 7 from 1930-39; today a death from this cause is something unusual. For the past five years we have had an average of 1 a year, while in some communities of the country no deaths have occurred for several years from this cause. From Table I we can readily realize that the diminished incidence of mortality in the lower age groups will have the effect of prolonging the average length of life as well as accumulating a higher percentage of older people. Table III explains this shifting of population in relation to age grouping for the past fifty years in this state.

TABLE III (a)

Percent change in population by three age groups—Delaware

Age Groups	1940	1930	1920	1910	1900	1890
-1 to 19......	31.4	35.9	37.2	38.5	41.0	42.9
20 to 49......	46.7	43.8	44.7	44.6	43.3	42.4
50 plus	21.9	20.5	18.1	17.0	15.4	14.6

TABLE III (b)

Change by number in population by three age groups—Delaware

Age Groups						
-1 to 19	83,809	85,391	82,859	78,010	75,854	72,340
20 to 49	124,359	104.570	99,632	89,972	80,443	71.617
50 plus	58,337	48,419	40,512	34.340	28,438	24,536

It is the lack of replacement, rather than previous high mortality rates in the lower age group that is responsible in the greatest degree for the decrease in the group under 19, (for the five decades, Tables III a, b) as compared to increases shown in the percentage of total population being gained by the middle and higher age brackets. The saving of lives is a helpful factor in compensation for lack of replacement. The increase in the average future lifetime in years from birth is a creditable result of social, economic, and medical efforts to overcome the common obstacles to human survival.

TABLE IV

Expected Length of Life at Birth for Five Periods*

	1940	1930	1920	1910	1900
White Male	62.8	59.1	56.3	50.2	48.2
White Female	67.3	62.6	58.5	53.6	51.1

In prolonging the average length of life the recognition and treatment of some of the chronic diseases has had an important part. In 1916 the average length of life of those dying from tuberculosis in Delaware was 33 years, while it had increased to 43 years in 1940. Similar results have been found from those with heart conditions given as the cause of mortality. With our attention being directed to the treatment and prevention of diseases about which our knowledge is adequate, we may continue to make progress when this knowledge is fully utilized. Ironically, accidental deaths, the cause about which we know the most has been brought up to first place as a cause of death among children 1 to 15 years of age. This is a direct result of the medical and public health programs in the treatment and control of disease; of secondary rank, our social and economic advancement. Only prolonged and persistent education in accident prevention will bring that rate down. The mortality from all accidental causes among the -1 to 19 age group in Delaware shows an average of 60 per year or a rate of 72 per 100,000 in this group for the years 1916-1920. The decline during the last two decades has been the least of any cause of mortality in this group, since to the period 1940-44 the average had been reduced to only 50 per cent or a rate of 60 per 100,000 population. In the field of accident prevention we have one of the most promising possibilities to apply our efforts in the furtherance of mortality reduction, since it will become increasingly harder to further lower the rates of other diseases common to the early years of life, rheumatic fever being the exception. Our increased knowledge and treatment of this disease will materially lengthen the life of potential victims of cardiac ailments.

With our diminishing birth rate the medical profession and public health officials need to still intensify their efforts in the conservation of life among the children. Medical service offered to them may well prove to be our best public health investment.

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* National figures from the Division of Vital Statistics

NURSING ACTIVITIES

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Public health nurses on the staff of the Delaware State Board of Health carry out a generalized public health nursing program. Each nurse is assigned to a district in which, by means of home visits, assisting in clinics, investigations, and group instructions, she helps to carry out the programs of the various clinical divisions of the State Board of Health, which are:

- Maternal Health (antepartum, postpartum, and supervision of midwives)
- Infant and Preschool Health
- Crippled Children's Service
- School Health
- Adult Health
- Communicable Disease Control (including Venereal Disease and Tuberculosis).

Ways in which the nursing staff helps to carry out these various programs:

Antepartum Nursing Service

- Assists in arranging for medical care.
- Gives general instructions in the hygiene of pregnancy.
- Takes blood pressure and collects urine specimens of midwife cases. This service is rendered to patients of private physicians if requested by physician.
- Instructs and assists in the preparation of supplies, etc., for home delivery.
- Conducts mothers' classes.
- Assists in antepartum clinics.

Postpartum and New Born Nursing Service

- Demonstrates nursing care and supervises all midwife cases. In the counties, demonstrations of bedside nursing care is available to patients of private physicians if requested by the physician.

(Note: By agreement between Wilmington Visiting Nurse Association and the Delaware State Board of Health, Wilmington Visiting Nurse Association staff visit the antepartum and postpartum patients in the area served by the Visiting Nurse Association.)

- Gives health supervision to mother until she has had six weeks postpartum examination.
- Demonstrates formula preparation.
- Demonstrates baby's bath.
- Arranges for loan of incubator and demonstrates its use.

Infant and Preschool Health Nursing Service

- Gives diet instructions for the normal child. Diet instruction material is distributed to private physicians' patients only with the recommendation of the physician.
- Refers child to physician or child health conference for medical supervision at regular intervals.
- Makes periodic visits to the home for health supervision; immediate referral to physician when any deviations from the normal are noted.
- Interprets the importance of immunization against communicable disease, and refers to private physicians or child health conference.
- Assists in the child health conferences.

School Health Nursing Service

- Assists in physical examinations and immunizations of school children.
- In the absence of a school nurse, assists the teacher in integrating health teaching into the school curriculum.
- Makes inspections of school children for control of communicable disease.
- Refers for medical care all children with deviations from the normal.

Venereal Disease Control

- Assists in case finding through interviews with patients known to be infected, and through investigations of intrastate and interstate reports.
- Refers patients and contacts to private physician or clinic for examination and treatment.
- Instructs patients concerning the nature of his disease and the need for treatment.

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* Director, Division of Public Health Nursing, Delaware State Board of Health.

Follow-up of patients who lapse treatment. This service is available to private physicians as well as to hospital clinics.

Assists in the educational service of the venereal disease control program.

Assists in venereal disease clinics.

Communicable Disease Control
(In the Counties)

Makes epidemiological investigations.

Gives general health instructions.

Demonstrates bedside care, methods of isolation, concurrent and terminal disinfection.

Works with school personnel in communicable disease control.

Assists in securing medical care.

Tuberculosis Nursing Service

Assists in securing medical care.

In the counties, demonstrates nursing care. In Wilmington and environs, bedside care is given by Wilmington Visiting Nurse Association.

Instructions regarding diet, routine, isolation and disposal of excreta.

Helps patient and family to a better understanding of the disease and need for treatment.

Assists family in making necessary adaptations.

Teaches the importance of medical supervision of all contacts.

Assists in chest clinics.

Crippled Children's Nursing Service

Assists in securing medical care.

Assists in interpreting to parents the diagnosis and the need for treatment.

Demonstrates bedside care, application of appliances, and crutch walking.

Helps patient and family to wise adjustment to crippling conditions of the patient by teaching the importance of encouraging the patient to engage in useful occupations within his ability of performance.

Assists in prevention of crippling conditions by early detection of deviations from the normal.

Assists in crippled children's clinics.

Summary

The nursing services carried out by the nursing staff of the Delaware State Board of Health follow the objectives as outlined by the National Organization for Public Health Nursing:

Helps to secure early medical diagnosis and treatment.

Renders or secures nursing care of the sick.

Teaches by demonstration and interpretation, and supervises nursing care given by relatives or attendants.

Assists the family to carry out medical and sanitary procedures for the prevention of disease and the promotion of health.

A SANITARY "NEEDS" SURVEY OF DELAWARE

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"Gib, when you and your father and myself first constructed the tennis court on the vacant lot in back of your house and where I taught both of you to play tennis and then later both of you very kindly walloped the Palm Beach slacks off of me, little did you think then you would be at the drafting table in the next room, putting solid dots, partly solid dots and just circles down on tracing paper in order to show the degree of sanitation of the many properties in all of our towns in Delaware. Little did you realize how many families in that day and age, 1941, were without the fundamentals of sanitation, namely: a safe water supply under pressure and a water borne system of sewage disposal. I know your eyes were opened, as are those of most people when they first come into contact with these problems."

That was in 1941, when Gib, a tall handsome youngster, was bending over the drafting board day after day spotting on maps the symbols denoting the sanitary condition of Bill Jones' house down in Selbyville and Sam Smith's just outside of Arden. Three years later he was one of a crew of five aviators, the only one killed in his plane, soaring some twenty-five thousand feet over German soil. Last week his mother met for the first time, in Pittsburgh, one of the five who were in the same plane with Gib. This is what he told her: "We were 25,000 feet up in the air above the flak. No one had said a word, when someone in the lead plane thought it was safe to say: 'I guess we must be at 26,000 elevation now' and immediately the German sound detector devices got this conversation, whereupon they moved the flak up from 20,000 to 26,000, centering a barrage of flak on the plane.'' The boy who played tennis with us and had then later came to the drafting board gave, at that moment, his all on a foreign land.

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* Sanitary Engineer, Delaware State Board of Health.

Gibs' tragic ending started a trend of thought which led once more to delving into some figures previously played with a year or so ago. An attempt therefore, has been made to express the cost of war, the money cost, in terms of the structures and facilities which all of us have come to regard as permanent requisites of the high standard of living characteristic of this country and incidentally rivalled only by certain smaller countries. The immensity of these sums expressed in digits is almost incomprehensible to the average person, but when translated into objects and figures familiar in size so that they can be comprehended, the enormity of the sacrifice made during these years not only in men but in the physical materials and manpower which could have been turned into peaceful pursuits, can be encompassed.

The Cost of World War II

The total cost of the war to the United States, according to a research study made by James H. Brady of the American University of Washington, was $317,600,000,000. This enormous figure might well be envisioned by referring to the following tabulation expressed in units with which we are all familiar:

The War Cost Could Have Provided

1. A deep well water supply and electric pump and a water-borne sewage system could have been provided for the 12,373,000 rural families of this country at a unit cost of $1300	$16,084,900,000
2. Municipal sewerage systems and complete sewage treatment plants for the 17,500,000 urban families at $800 per family	14,000,000,000
3. A $5,000,000 college for every 200,000 people in these United States	3,475,000,000
4. A $300,000 hospital for every 10,000 people in these United States	4,170,000,000
5. A $1,000,000 high school for each 1,000 pupils of high school age	6,152,018,000
6. Farms, with farm buildings and equipment for 50% of the rural families of this country	120,357,000,000
7. A $10,000 home and lot for 80% of the urban population of these United States	140,000,000,000
8. One municipal golf course for each 500 families similar to the one at Oakland, California	2,100,000,000
9. Dual highways, spanning the country six times	8,400,000,000
Total	314,738,918,000

There would be left, sufficient money to clean up all the streams in the country, control all mosquito life in the country, and to periodically spray the entire country with DDT for insect control, as well as many other incidental activities.

As I glanced at these figures, I wondered what could have been done in Delaware if the above war cost had been divided on a population basis. In breaking the cost down to a state basis, I found that Delaware's share would have been $616,920,000, and that the following improvements could have been made:

What We Could Have Done In Delaware

1. A water supply under pressure plus a water-borne sewage system could be provided for the 9,531 farms in this state at $1300 per farm		$ 12,390,300
2. Sewerage systems plus complete sewage treatment plants for all towns now without sewers and down to populations as low as 200		4,212,000
3. Complete treatment of the sewage could be provided for all the towns and cities excluding those mentioned above		2,388,000
This would total for secondary treatment	$ 399,400	
For complete treatment	5,675,000	
Total		6,074,400
4. A complete water supply system for all of the incorporated towns in the state regardless of population which do not now have water supplies		390,000
5. Rehouse some 16,000 urban families including all utilities, water, sewers and pavements $800 per home		128,000,000
6. Rehouse and re-equip 60% of the farms of the state at $9,000 each		51,471,000
7. One swimming pool for each town above 1,000 population at $50,000		850,000
8. One municipal golf course for each town above 1500 population at $90,000		1,080,000
9. One playground, including baseball diamond and playground equipment for all towns over 1,000		204,000
Totals		

The sum total of these still leaves ample money to take care of industrial wastes problems, completely control the mosquito population of the state, provide parkways, recreation areas throughout the state and many other things that add to the amenities of life.

So after musing with these figures and considering that this unparalleled production was made during a period when we as a nation maintained the highest standard of living reached collectively by any nation, even in peacetime, one began to wonder what would happen when this wartime efficiency began to take hold in peacetime. These war figures, coupled with the efficiency of our industrial system, turned one's thought to the future and gave a possible clue to the reasoning of many state officials in their efforts to at least prepare plans for peacetime construction looking forward to the time when all of the resources of the country may be needed to get the nation off dead center again.

Planning Is a Factor

Many states have given serious consideration to public works planning, and such states as New York, Michigan, Maryland, New Jersey, California, Pennsylvania, Illinois, Indiana, and Washington have gone so far as to assist in the preparation of plans by the municipalities for such municipal items as bridges, sidewalks, parks and playgrounds, roads, airports, public buildings, water supplies, sewerage systems and sewage treatment plants. Undoubtedly, such impetus was given by the experience of the decade of 1930 and the reaction has been world-wide in character. In this country such preparedness by the states has also been actively sponsored by the Council of the State Governments.

New York state under Governor Dewey probably has the most complete public works program of any state in the union. As a matter of fact, a back log of some $778,000,000 worth of construction has been built up through application for state aid as of July 1, 1946, and no further applications are being received by the state officials. For the past several years the Federal Works Administration has been offering municipalities the loan of one-half of the cost of preparing engineering plans, the funds to be returned after construction has started. There is implied in the loan the fact that construction work will be started in four or five years. This is one of the draw-backs too. In the case of the states, however, especially since most of them are in excellent financial shape, no time factor is indicated as to the starting of construction. Some states grant outright one-half of the cost of the preparation of the plans, approximately 10% of the estimated cost of the project; others merely loan the money to be paid back if and when construction starts.

Another important factor concerned with planning is having a complete plan, and even though only a small amount of actual construction work is done it can be tied in to the master plan. A typical instance of the need of such planning occurred in one of our towns in Sussex County where it was suggested that certain storm water sewers be put in without an adequate survey of the whole territory to be served. Such instances can be duplicated time and again.

In the state of Delaware such a plan of financial assistance could be of great help to the many incorporated towns and also to the counties in preparing backlogs for future public works. Thus much money could be saved by intelligent planning of the fairly immediate future needs. Loans by the state also would develop a closer cooperation between the state and local levels of government as against loans from the federal government directly to the cities. One or two communities in this state have taken advantage of the federal works loans, lacking such assistance from the state. This would indicate an interest in such planning already.

Much good work could be done by a master survey of the water and sewer needs of metropolitan Wilmington, including much of the country area. The state has assisted in the highway building program, the school program, and the trend of the thinking in many states tends to spread this cooperation between the several layers of government out into other fields of activity so that assistance by the state in other fields would be merely duplicating the experience of many of our larger states.

At a meeting of the Council of State Governments and members of the Interstate Commissions on Co-operation of the New England

and Middle Atlantic States held recently in New York there was a tendency to feel that too much emphasis had been put on the preparation of plans for public works construction. It is undoubtedly true that this type of work should be held off to prevent competition for materials and manpower except in those cases where public health or safety is involved, but this should not deter the preparation of plans.

The war has demonstrated, however, that we have a huge productive capacity in this country and the time may arise sooner than most people anticipate that our so-called “ceiling prices” will be clutched at by many groups who object to such interference now, but when we look at the lettering again someone will have rubbed off the word “ceiling” and painted in the word “basement!” Many of the industrialists and economists of this country underestimated our productive capacity prior to the war effort, and perhaps none of us has envisaged the gyroscopical plunges that a modern economic society can make. The wise thing would be to prepare for any eventuality, and states like New York and others are to be commended for the tremendous amount of work they have done in preparing plans and establishing orderly bookkeeping of future public works improvements.

A Recent Needs Survey

Recently a so-called “Needs” survey has been requested by the U. S. Public Health Service of all the various states. The Service has rendered a good deed in that it has requested the various officials to prepare an inventory of the things that are needed in each state. Such a request, while entailing a considerable amount of work, is not an unwelcome one since it tends to revitalize some of the problems that have lain dormant during the war years. The survey in Delaware has been made by the Division of Sanitation and applies to individual towns and unincorporated areas, as well as a partial estimate of the needs of the farm areas. A summary of the individual projects and approximate cost estimates follows:

WATER SUPPLY DEFICIENCIES OR NEEDS

		C. I. Water Lines			Other Additions	
Municipality or Unincorporated area	Estimated Population	No. Ft.	Size	Est. Cost	Type	Est. Cost
Wilmington	117,000	53,000	10″–48″	$ 922,000.00	Pumps Add. to slow sand filters	$ 89,000.00 360,000.00
Dover	5,700	5,000	4″–8″	19,000.00	Water Softening Plant	40,000.00
Dagsboro	240	10,100	4″–8″	27,737.50	Well & Pump Station Elev. Tank	8,000.00 18,000.00
Felton	460	900	4″–6″	2,850.00	Chlor-O-Feeder	300.00
Millsboro	600	1,400	4″–6″	4,500.00		
Bridgeville	1,300	1,200	6″	3,600.00	Chlor-O-Feeder Iron Removed Plant	300.00 9,000.00
Harrington	2,250	7,000	4″–6″	26,000.00	Chlor-O-Feeder	300.00
Laurel	2,950	2,000	4″	6,000.00	Iron Removed Plant	15,000.00
Lewes	2,400	9,500				
Middletown	1,529	3,000	6″–8″	10,800.00	Elev. Tank	18,000.00
Milford	4,700	5,500	4″–8″	17,000.00	2 Deep well pumps 1 Chlorinator	3,400.00 1,200.00
Milton	1,300	1,600	4″–6″	5,100.00		
Newark	5,500	5,000	6″	17,500.00		
New Castle	4,600	2,700	4″–6″	8,550.00		
Rehoboth	1,150	7,280	6″–12″	42,520.00	2 Pumps	5,800.00

WATER SUPPLY DEFICIENCIES OR NEEDS

		C. I. Water Lines			Other Additions	
Municipality or Unincorporated area	Estimated Population	No. Ft.	Size	Est. Cost	Type	Est. Cost
Seaford	3,000	4,200	10″	21,000.00	New Well Elev. Steel Tank Iron Removal Plant	5,000.00 24,000.00 18,000.00
Smyrna	2,000	6,000	4″	18,000.00	1 Pump Add. to Pump Stat.	1,800.00 10,000.00
Blades	700	11,700	6″–8″	27,325.00	Deep Well Pump Pump Station Elev. Steel Tank	2,600.00 2,000.00 18,000.00
Camden	700	1,300	4″–6″	4,200.00		
Clayton	890	1,000	4″	3,000.00		
Frankford	800	5,800	4″–6″	18,500.00		
Greenwood	600	2,450	4″–6″	8,275.00		
Newport	1,200	1,300	4″–6″	4,250.00		
Selbyville	882	1,500	4″–6″	4,950.00		
Wyoming	920	2,700	4″	5,100.00		
Totals	163,371	153,130		$1,237,757.50		649,700.00

SEWERAGE DEFICIENCIES OR NEEDS

Municipality or Unincorporated area	Estimated Population	No. Ft.	Size	Est. Cost	Type	Est. Cost
Wilmington	117,000			3,230,000.00	3 Pumping Stat. Primary Treatment Plant	105,000.00 2,700,000.00
Dover	5,700	5,000	8″	15,000.00	Add. Sludge Storage Capacity Add. Sludge Bed Capacity	15,000.00 5,000.00
Felton	460	14,920	6″–10″	47,140.00	380′-C. I. Pipe Force Main 1 Pump Station Primary Treatment Plant	950.00 3,500.00 12,500.00
Millsboro	600	9,740	8″	29,920.00	1 Pumping Sta. Primary Treatment Plant 500′ C. I. Pipe Force Main	4,500.00 18,000.00 1,750.00
Bridgeville	1,300	3,000	8″	9,000.00	Pumping Station Primary Treatment Plant	5,000.00 18,000.00
Claymont	4,000	16,900	8″–10″	51,750.00	Primary Treatment Plant	
Delaware City	1,200	2,400	8″	7,200.00	Pumping Station Primary Treatment Plant	6,000.00 20,000.00
Elmhurst	1,700	2,300	8″	6,900.00		
Georgetown	1,820	1,500	4″	3,000.00	2½ Ton Truck Pump Chlorinator	3,600.00 500.00 1,000.00
Harrington	2,250	3,000	6″–8″	8,250.00		
Holly Oak	1,100	2,100	8″	6,300.00		

SEWERAGE DEFICIENCIES OR NEEDS

Municipality or Unincorporated area	Estimated Population	No. Ft.	Size	Est. Cost	Type	Est. Cost
Laurel	2,950	7,400	8"–10"	25,600.00	2 Pumping Stations	10,000.00
Lewes	2,400	4,600	8"–12"	21,800.00	½ Pumping Station	16,000.00
					Primary Treatment Plant	35,000.00
Marshallton	16,900	13,500	8"–10"	52,400.00	1200 C. I. Force Main 6" in diameter	4,200.00
					Pumping Station	4,000.00
Middletown	1,780	3,000	8"	9,000.00		
Milford	4,700	13,000	8"–10"	44,000.00	2 Sewage Pumps	1,600.00
					1000'-B. C. I. Pipe Force Main	4,000.00
					Pumping Station	8,000.00
					Enlargement to Treatment Plant	20,000.00
Milton	1,300	25,350	8"–10"	77,400.00	1200'-6" C. I. Force Main	4,200.00
					Pumping Station	12,000.00
					Complete Treatment Plant	35,000.00
Newark	5,500	5,000	8"	15,000.00	5000'-6" C. I. Force Main	20,000.00
					1 Comminutor	1,200.00
					Sludge Pump	600.00
					Add. to Treatment Pl.	35,000.00
New Castle	4,600	7,300	8"	21,600.00	800' 6" C. I. Force Main	2,800.00
					1 Pumping Station	8,000.00
Rehoboth	1,150	200	15"	900.00		
Richardson Park	1,750	2,100	8"	6,300.00		
Seaford	3,000	3,800	8"	11,400.00	1700 10" C. I. Force Main	8,500.00
		4,300	18"	43,000.00	Pumping Station	10,000.00
					Primary Treatment Pl.	60,000.00
Smyrna	2,000	4,000	8"	12,000.00	Pumping Station	4,500.00
					Add. to Treatment Pl.	12,000.00
Arden	640	28,420	8"–10"	86,735.00		
Ashley	650	600	8"	1,800.00		
Belvidere	600	4,800	8"	14,400.00		
Blades	700	13,500	8"	40,500.00	Pumping Station	4,000.00
					Primary Treatment Plant	12,000.00
Brack-Ex	600	800	8"	2,400.00		
Brookland Terrace	950	4,800	8"	14,400.00		
Camden	700	5,100	8"	15,300.00	1600' C. I. Pipe 6" Force Main	5,600.00
					Pumping Station	4,000.00
					Primary Treatment Plant	12,000.00
Clayton	823				Add. to Sewage Treatment Plant	2,500.00
Cranston Hgts.	700	8,700	8"	35,150.00		
Delmar	900	2,350	8"	7,050.00	4700' 8" C. I. Force Main	18,800.00
					Pumping Station	5,000.00
Frankford	800	9,400	8"	28,200.00	Pumping Station	4,500.00
					Primary Sewage Treatment Plant	18,000.00

SEWERAGE DEFICIENCIES OR NEEDS

Municipality or Unincorporated area	Estimated Population	No. Ft.	Size	Est. Cost	Type	Est. Cost
Frederica	550	8,600	8″	25,800.00	Primary Sewage Treatment Plant	7,000.00
Greenwood	600	13,400	8″	40,200.00	1100′ 6″ C. I. Force Main	3,850.00
					Pumping Plant	4,000.00
					Primary Sewage Treatment Plant	12,000.00
Hamilton Park	690	7,400	8″	28,800.00	800′ 6″ C. I. Force Main	2,600.00
					Pumping Station	6,000.00
Holloway Terrace	710	14,800	8″	59,200.00	Pumping Station	6,000.00
					Primary Sewage Treatment Plant	12,000.00
Minquadale	1,010	22,000	8″	88,000.00	2400′ 6″ C. I. Force Main	7,200.00
					Pumping Station	8,000.00
					Primary Sewage Treatment Plant	18,000.00
Newport	1,200	1,600	6″-8″	5,600.00	Primary Sewage Treatment Plant	28,000.00
					Pumping Station	7,000.00
Selbyville	882	15,800	8″	47,400.00	Pumping Station	6,000.00
					Primary Sewage Treatment Plant	16,000.00
Silview	615	7,400	8″	22,200.00		
Cedars	575	12,400	8″-10″	40,700.00		
Townsend	600	11,600	8″	34,800.00	1000′ 6″ C. I. Force Main	3,500.00
					Pumping Station	4,500.00
					Primary Sewage Treatment Plant	18,500.00
Wyoming	910	12,800	8″	38,400.00	Pumping Station	4,500.00
					Primary Treatment Plant	21,000.00
Ardentown	245	4,700	8″	23,500.00		
Carrcroft	350	8,650	8″-10″	45,250.00		
Deerhurst	400	3,350	8″	16,750.00	Pumping Station	3,500.00
					3000′ 6″ Force Main	10,500.00
Forest Hills	350	10,500	8″-10″	34,500.00		
Gwinhurst	1,200	18,900	8″-10″	96,900.00		
Highpoint	400	7,800	8″	42,900.00		
Holly Oak	350	5,800	8″	29,000.00	1400′ 6″ C. I. Force Main	5,600.00
					Pumping Station	4,500.00
N. Holly Oak	410	6,800	8″	34,000.00		
Liftwood	375	11,500	8″-10″	65,700.00		
Shellpot Area	15,000	14,600	15″-24″	109,400.00	Add. to Sewage Treatment Plant	45,000.00
Silverside Heights	650	5,100	8″	25,500.00		
Stanton	595	10,700	8″	53,500.00	2 Pumping Stations	9,000.00
					Primary Sewage Treatment Plant	12,000.00
Collins Park	1,600	37,800	8″-10″	154,000.00	Pumping Station	5,500.00
Swanwyckal					5200′-6″ C. I.	
Buttonwood Area					Force Main	23,400.00
Totals	459,970	506,880		$5,079,095.00		$3,622,850.00

COMMUNITY SANITATION DEFICIENCIES OR NEEDS

(Sanitary Pit Privies or Equivalent)

Municipality or Unincorporated Area	Pop.	No. of Structures	Cost Per Unit	Total Cost
Wilmington	117,000	1,000	75.00	75,000.00
Dover	5,700	236	65.00	15,340.00
Bethel	300	82	65.00	5,330.00
Bowers	400	120	65.00	7,800.00
Cheswold	250	21	65.00	1,365.00
Dagsboro	240	35	65.00	3,575.00
Ellendale	300	27	65.00	1,755.00
Felton	460	14	65.00	910.00
Houston	400	44	65.00	2,860.00
Kenton	250	6	65.00	390.00
Leipsic	225	79	65.00	5,135.00
Little Creek	300	62	65.00	4,030.00
Magnolia	225	41	65.00	2,665.00
Millsboro	600	91	65.00	5,915.00
Ocean View	406	111	65.00	7,215.00
Odessa	391	6	75.00	450.00
Port Penn	271	11	75.00	825.00
St. Georges	350	11	75.00	825.00
Bridgeville	1300	91	65.00	7,095.00
Delaware City	1200	39	75.00	2,925.00
Georgetown	1820	110	65.00	7,150.00
Harrington	2250	137	65.00	8,905.00
Holly Oak	1100	34	75.00	2,550.00
Laurel	2950	325	75.00	24,375.00
Lewes	2400	164	65.00	10,660.00
Middletown	1780	19	75.00	1,425.00
Milford	4700	39	65.00	2,535.00
Milton	1300	95	65.00	6,175.00
Newark	5500	64	75.00	4,800.00
New Castle	4600	65	75.00	4,875.00
Rehoboth	1150	114	65.00	7,410.00
Seaford	3000	225	65.00	14,625.00
Smyrna	2000	165	65.00	10,725.00
Arden	640	52	75.00	3,890.00
Ashley	650	12	75.00	900.00
Belvidere	600	110	75.00	8,250.00
Blades	700	124	65.00	7,960.00
Brack-Ex	600	10	75.00	750.00
Brookland Terrace	950	30	75.00	2,250.00
Camden	700	47	65.00	3,055.00
Cranston Hghts.	700	64	75.00	480.00
Frankford	142	142	65.00	9,230.00
Frederica	550	102	65.00	6,630.00
Greenwood	600	88	65.00	5,720.00
Hamilton Park	690	93	75.00	6,975.00
Holloway Terrace	710	45	75.00	3,375.00
Minquadale	1010	93	75.00	6,975.00
Newport	1200	64	75.00	4,800.00
Roselle	905	35	75.00	2,625.00
Selbyville	882	51	65.00	3,315.00
Silview	615	64	75.00	4,770.00
Cedars	575	62	75.00	4,650.00
Townsend	600	80	75.00	6,000.00
Wyoming	910	140	65.00	9,100.00
Ardentown	......	28	75.00	2,100.00
Gwinhurst	1200	101	75.00	7,575.00
Holly Oak	350	45	75.00	3,365.00
N. Holly Oak	410	70	75.00	5,250.00
Silver Side Hghts.	650	40	75.00	3,000.00
Stanton	595	70	75.00	5,250.00
Collins Park	1600	73	75.00	5,475.00
Totals	458,970	5,618	4,275.00	628,290.00

CONCLUSION

What all this has to do with the question of Public Health? That also starts a trend of thought which has been running through my mind. About twenty years ago, in Maryland, a young sanitary engineer had just been made Chief Engineer of the State Department of Health in Maryland. Later he became the outstanding public health engineer in the country. A few years ago he became head of the Department of Sanitary Engineering at Johns Hopkins University, where his influence spread still further. When the British and the Americans were landing in Europe he was in London ready to take over the sanitary engineering problems of that invasion. Today his influence is centered in the South American countries, training men to be prepared to construct water supplies, sewerage systems, and to combat all insect-borne diseases of these countries.

Speaking before the Inter-American Institute on sanitation recently, he said: "Let us look at China where each day out of 400,000,000 people 16,000,000 are sick and where the death rate is 25 per 1,000! In India even worse conditions prevail. So widespread and dramatic are these tolls in India that in the 1945 issue of the British *Who's Who* a distinguished leader in India lists under the heading of "Recreation": "Propaganda for rousing the sanitary conscience of the people in the matters of public health research in intestinal flagellate protozoa and fermentation bacteria." It is a tribute to this leader that he puts the plight of his people before tennis or golf!

Two problems stand out very clearly today. One is the problem of providing a unity of purpose throughout the world, and the second that of preventing the world economic machinery from stopping on dead center as it did a decade or so ago. Many feel that the diplomats and the great religious organizations are failing mankind twice in a generation and that perhaps a newer approach is needed. Maybe this approach might be a world-wide attack on disease, conducted with the vigor of war and with sufficient funds to insure the success of such efforts. The second problem is to keep the economic machine going in order to prevent the inroads of propaganda which can only find footing in this country when our magnificent industrial machine is out of gear and when the masses clutch for any standard.

We are a small state, but if each citizen can orient his thinking toward today's needs, and if each hamlet and town and county can be prepared for the future we can add our little contribution to the sum total of all units which make up these United States. Thus we can help in our small way, and it may be the best answer to all alien doctrines, however well presented.

May I cite two quotations apropos of the niche sanitation has had in the role of civilization and its role in today's world, as well as the significance planning and preparedness may have in the economy of the next decade:

1. From "Glory That Was Greece," by J. C. H. Stobard and quoted by Dr. Abel Wolman: "Let no cultivated reader despise these details (lavatories, sinks, sewers, and manholes). There is no truer sign of civilization and culture than good sanitation. It goes with refined senses and orderly habits. A good drain implies as much as a beautiful statue. And let it be remembered that the world did not reach the Minoan standard of cleanliness until the great sanitary movements of the later nineteenth century."

2. From the August, 1946, issue of Harper's Magazine: "The Scared Men in the Kremlin," by John Fischer: "There is only one way, it seems to me, to cure the Russians of their fear of foreign attack. That is for the United States to pull through the next fifteen years without a major depression and without going 'fascist.' If we can find some democratic method of controlling the violent ups-and-downs of our economy; if we can hold on to full employment and our freedom at the same time, we will then have proved beyond question that the communists' forebodings are all wrong."

While the ways suggested above may seem expensive, perhaps that is because most of us are not taking time out to imagine the contrast of the cost of conducting industry and even civilization underground in the next world war. The advance in the art of war between World War Number 1 and 11 should give us pause as to the enormous gap that would develop in the art of war between World War II and World War III.

And as Nehru, the great Indian leader, has expressed: "We may be backing up the wrong horse this time, and the black and brown races, egged on by a foreign totalitarianism, may chant collectively the expression used the other night on the radio by Raymond Graham Swing: 'The Americans have laid the axe at the tree of civilization when they wiped out 105,000 innocent men, women, and children, a tragic breach of the rules of war, still not yet accepted as abhorent in the moral code of the twentieth century.' " Yes, it is time now to think of these things. Many things can happen so suddenly, so strangely. The piece of shrapnel just missed Gib's "flak suit" one half inch. We too may be vulnerable in today's world, and the philosophy of Hamilton, Jefferson, and Madison may be sacrificed by the shallow men playing today's game of diplomacy.

Our job is to lead the way in our generation as did those men who, lacking the tools of today—the radio and the motion picture, yet moved civilization westward and produced the most powerful nation in peace or war within less than a century and a half. If we cannot take that lead now let's get ready for the shock. Planning and preparedness may pay good dividends.

LABORATORY COMMENTS

R. D. HERDMAN, B. S. *
Dover, Del.

Food Poisoning Due to Staphylococci

On August 8, 1946, Mrs. B. served baked ham at a family dinner of six people at one o'clock. One son thirty-one years old visited several of his friends after dinner and returned home. About 5 o'clock this son went to his room on the third floor, and immediately became short of breath, nauseated, faint, and temporarily unconscious. He also had diarrhea. He was rushed to the Delaware Hospital, where he remained for three days. The final diagnosis was acute gastroenteritis, moderately severe, probably dietary. Three other persons who had eaten this ham also

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* Director of Laboratory, Delaware State Board of Health.

became slightly ill. They were nauseated, vomited, and had diarrhea. On August 17th, I received in the mail a small portion of this ham and on culturing it on blood agar plates found a pure culture of staphylococci.

The Doleman technic was used to determine the pathogenicity of the strains of staphylococci. One kitten was injected with 2 c. c. of the filtrate after it had been heated at 100° C. for 30 minutes. About two hours later the kitten developed the characteristic symptoms, proving the staphylococci were the variety that produce enterotoxin.

Annual Evaluation of Serodiagnostic Test For Syphilis

During January, February and March of this year this laboratory again participated in the annual evaluation of serodiagnostic tests for syphilis conducted by the U. S. Public Health Service. This study was conducted along the same lines as heretofore: that is, 369 specimens of blood were submitted by the U. S. P. Health Service to each participating laboratory for examination by technique used in its routine diagnostic work. The Kahn standard and Kolmer simplified methods were evaluated by comparing our results with results obtained by the originators of these tests. This laboratory received excellent ratings in both of these tests. Our results on Kahn standard tests were sensitivity 81.6% and specificity 100%, compared with Dr. Kahn's sensitivity rating of 83.1% and specificity 100%. With the Kolmer test our sensitivity was 82.8% and specificity 100%. as compared with Dr. Kolmer's sensitivity 88.4% and specificity 100%.

Typhoid Fever

Laboratory examinations possess great value in the diagnosis of typhoid fever, especially during the early stages of the disease. They are also of value in the detection of atypical cases and of carriers; likewise in the differentiation of typhoid fever from brucellosis, paratyphoid, miliary tuberculosis and other diseases which may bear a clinical resemblance to it. The results of laboratory examinations may vary a good deal according to the severity and duration of the disease.

Undoubtedly blood cultures are of most value in an early diagnosis. With proper technic typhoid bacilli may be detected in the blood in practically every case of typhoid fever during the first week of the disease, in about 80 to 85% of cases during second week, and in decreasing percentages in later weeks. The blood culture therefore offers certain means of early diagnosis. It is in a sense complimentary to the Widal reaction, the former decreasing and the latter increasing in reliability as the disease progresses. The blood culture gives the best results before the Widal appears, as one would expect from the fact that the Widal tests depends upon the presence of antibodies which are inimical to the bacilli. The two methods together will establish the diagnosis in practically every case at any stage. Bacilli disappears in convalescence and reappears in a relapse.

On the other hand only 10 to 15% of cases are likely to show typhoid bacilli in the feces during the first 10 days of the disease. Thereafter the percentage rapidly increases, reaching 50% by the third week, and from 80 to 90% during convalescence. Under the conditions, bacteriological examinations of the feces possess diagnostic value and especially in suspected or atypical cases of typhoid fever with negative blood cultures and doubtful agglutination reactions. Needless to state, typhoid bacilli occur in the feces of carriers suffering from diseases other than typhoid fever. Bacteriological examinations of the feces are extremely valuable for the detection of typhoid carriers. About 10% of typhoid fever cases become convalescent carriers for 8 to 10 weeks after convalescence: about 2% remain chronic carriers.

Typhoid bacilli do not ordinarily occur in the urine until after the second week of the disease, when only about 20 to 30% of cases show their presence. Bacteriological analysis of urine, therefore, are not ordinarily required or indicated for diagnostic purposes except in atypical or doubtful cases. During the early period of convalescence about 10% of cases show presence of typhoid bacilli. Therefore repeated bacteriological examinations of both urine and feces are indicated before quarantine is lifted to guard against the possible discharge of carriers.

In this laboratory we have been very successful in isolating typhoid bacilli from blood clots of specimens sent in to be tested for typhoid.

Typhus Fever and Rocky Mountain Spotted Fever

The Weil-Felix reaction, although nonspecific, affords a reliable method for the laboratory diagnosis of Rocky Mountain fevers and related diseases. On the other hand, studies based upon specificity, such as histological examinations of skin lesions, suggested by Frankel in 1914, and inoculation of blood from patients into guinea pigs, described by Nicolle in 1911, both important diagnostically, are not practicable routine procedures. The complement fixation test with specific extracts, as suggested by Cuthoire in 1910 and Markel in 1913, and the globulin test developed by Weltman in 1916 have not proved to be of diagnostic value. However, more recent studies by Bengtson and Topping indicate that a complement fixation test using rickettsia is of value in differential diagnosis of certain rickettsial infections.

In 1916 Weil and Felix found that a strain of proteus vulgaris isolated from the urine of a typhus fever patient was agglutinated to a high titer not only with serum of the patient, but also by the serum of other individuals suffering from typhus. Apparently no direct connection exists between typhus fever and the proteus X bacillus, since they are found in only a small number of patients and are not demonstrable in the lesions, and do not produce the disease experimentally. Guinea pigs inoculated with proteus X bacilli are not subsequently immune to infectious typhus material nor can the bacilli be recovered after true typhus infections.

There is evidence to believe that a close relationship exists among the different types of typhus, and that the causative agent of typhus is related to that of the Rocky Mountain spotted fever, tsutsugamuchi fever (Japanese river fever), and French disease called fevre boutomeuse. This has been determined to some extent by serological reactions and cross protection experiments in animals. The differential diagnosis of Rocky Mountain spotted fever and typhus by inoculation of male guinea pigs and by protection tests is carried out by very few laboratories in this country. The necessity of special equipment, maintenance of virus strains and expense make it an impractical procedure for routine public health laboratories.

In view of the marked specificity of the agglutination of proteus X strains in the sera of typhus fever patients it might seem that little difficulty would occur in making serologic tests for the presence or absence of the disease. However, in the studies made by Welch it was demonstrated that the cultivation of proteus X19 strains on certain media resulted in their dissociation. The variants which developed were found to give inaccurate results in Weil-Felix tests when used as a control serum from patients with no clinical symptoms of the disease. In a study of 19 diagnostic proteus X strains obtained from laboratories in various sections of the United States and Canada, only six were nonmotile in spite of the fact that in several instances the motile strains had been obtained originally from nonmotile cultures.

The diagnostic agglutinins present in the blood serum of typhus and Rocky Mountain spotted fever patients are invariably of the somatic type, and the O type antigen made from nonmotile strains of proteus group should be used exclusively in making diagnostic tests, not only because the specific antigen relationship between the virus of Rocky Mountain spotted fever, etc., and proteus X19 but also because of the possible presence of flagellar agglutinins in the patients' serum which are not diagnostic of Rocky Mountain spotted fever. These nonspecific reactions will be obtained with motile strains of proteus X19 because of their antigenic relationship.

To establish the diagnosis, a series of three blood samples should be submitted in both questionable and clinically positive cases. The first is taken soon after the nature of the illness is suspected or when the rash appears. At this time the blood is usually negative, but is needed to check the results from later samples; the second is taken between the 12th and 15th day and is often positive, particularly if results of the first sample are on hand for comparison, but titer is sometimes too low to be significant. The third is taken during early convalescence, and is usually definitely positive, but results of earlier tests may be needed for comparison. Occasionally a positive test is not obtained until 30 days after onset or even later. If only two specimens can be obtained, the first should be taken as soon as the nature of infection is suspected, and the second on the 12th day. A marked increase in titer ascertained by repeated examinations is helpful in reaching a diagnosis.

It is hoped that in the near future this laboratory will be able to obtain rickettsia antigens, so that we will be able to differentiate Rocky Mountain spotted fever, typhus, and other rickettsial infections.

MEDICAL TREATMENT OF HIGH BLOOD PRESSURE*

J. Q. Griffith, Jr., M. D.,**
Philadelphia, Pa.

Obviously, in the time available, it is impossible to cover the entire subject of the medical treatment of high blood pressure. I therefore, have been compelled to choose between a general sketch of the problems, a bird's eyeview as it were, and a detailed discussion of a single aspect. I have chosen the former, believing it is easier to fill in details by reading if one has a grasp of the general subject. Moreover, I would add a caution. This is very largely a personalized credo, based upon much work and thought throughout the past 17 years, but still sharing the usual tendency of personal beliefs—the possibility of error.

High blood pressure, as it is measured clinically, is really high arterial pressure. It may be classified in a number of ways:

1. As to whether it is associated with high, normal, or low capillary pressure. Normal capillary pressure is probably the rule, but high capillary pressure is seen in certain patients with pituitary and renal disease, and low capillary pressure may be suspected if the patient presents symptoms of dizziness, vertigo, easy fatigue without dyspnea, and mental sluggishness.

2. As to whether the dominant physical change is arteriolar spasm or sclerosis. In the latter case there is not only loss of elasticity but actual diminution in number of capillaries. Direct observation of the capillaries of the skin through the capillary microscope, both before and after the local injection of histamine, gives us this information. Parenthetically, I might remark that this is of value in prognosis. In patients with extreme sclerosis, as shown by this test, life expectation seldom exceeds six months.

3. As to the continuing presence of the initial cause of the hypertension. When such cause is present, we speak of the hypertension as active. It is called inactive when the cause is no longer present. This concept originated in the experimental laboratory, where repeatedly we were able to produce arterial hypertension, discontinue the vascular insult, and have the hypertension continue weeks, or months, thereafter. Nevertheless, such hypertension tends to recover eventually, and this recovery period is hastened the shorter the duration of the vascular insult and the less its intensity.

In man, we consider hypertension is active where a cause can be shown to be present, and inactive where no cause can be demonstrated. It is certain that such a differentiation cannot be made with absolute accuracy in every case, but it is my personal belief that the chance of error is less than 10%. Since the diagnosis of inactive hypertension is a matter of exclusion, one would expect that the most common error would be to mis-diagnose an active case as inactive.

Following successful treatment of an active case of hypertension, when the cause is removed, one of three things may happen:

1. The blood pressure may remain at the original level (about 40%).

2. The blood pressure may fall somewhat, but not to normal (about 40%).

3. The blood pressure may fall to normal (about 20%).

Patients who behave as in number 1 and 2 are now examples of inactive hypertension.

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* Read before the Medical Society of Delaware, Wilmington, October 10, 1945.

** Director of the Laboratory for the Study of Hypertension, Robinette Foundation, Hospital of the University of Pennsylvania.

Causes of Active Hypertension

1. Due to increased activity of the pituitary:

   a. Limited to the posterior lobe. Diagnosis is made on the basis of positive bioassay for antidiuretic hormone[1] in patient's blood.

   b. Including anterior and posterior lobes. Diagnosis is made on the presence in blood of hormones from both lobes, the gonadotropic[2] representing the anterior lobe.

2. Due to renal malfunction:

   a. Inadequate renal function, as demonstrated by a rise in plasma creatinine, measured according to the method of Steinitz and Turkand[3], or by a diminished urea clearance.

   b. Renal ischemia, as in the Goldblatt type of hypertension. This, in our opinion, is very rare, and is not diagnosed in our laboratory.

3. Due to, or associated with, blood vessel injury characterized by abnormality in the inter-endothelial cement substance of the capillaries. Such capillaries rupture in abnormal numbers when venous pressure is raised, as in carrying out the Gothlin[4,5] procedure. In some cases, this may represent a degenerative state, as in the elderly, or, in younger individuals, be the result of a form of vascular allergy. This group includes most of the individuals subject to apoplexy or retinal hemorrhage.

4. Due to increased activity of the adrenal. Except in the case of tumor, suitable diagnostic procedures are either not available or, at least, not accepted.

5. Due to a miscellany of other conditions, including lead poisoning, which may occasionally be recognized if thought of.

Medical Treatment of Hypertension

General Purpose:

1. To lower the blood pressure in persons with inactive hypertension. The drug is thiocyanate[6,7,8].

2. To remove the cause of active hypertension when the hypertension either becomes inactive or, at times, falls to normal. Thiocyanate is not effective in patients who have active hypertension and is even dangerous in those who have increased capillary fragility[5], where it may predispose to apoplexy.

Treatment of the various forms of active hypertension is as follows:

1. When due to increased pituitary activity involving only the posterior lobe, the choice lies between pituitary irradiation[9], and production of an anti-hormone[10] by repeated injections of extracts of the posterior lobe of the ox. Results are good in about 75% of cases.

2. When due to increased activity of both lobes of the pituitary, sex hormones therapy is indicated[11]—testosterone for men and stilbesterol for women. Results are good in better than 50%.

3. When due to early renal inadequacy[12], vitamin A, 100,000 units a day by mouth, is effective in less than 50%. In more advanced cases it is entirely useless.

4. When associated with increased capillary fragility rutin, or hesperidin is indicated, and results are good in better than 90% [4,5].

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10, 11, 12. To be published.

Discussion

Dr. E. R. Miller (Wilmington): I would like to discuss Dr. Griffith's paper. I feel he is a pioneer in this work. The difference between Dr. Griffith's treating hypertension and the majority of us treating hypertension is the difference between the bright sunshine playing on a case and a heavy fog. His work is outstanding.

However when we consider the toll of hypertension as the cause of mortality in this country, it certainly is an outstanding practical clinical problem. Dr. Griffith, of course, has dwelt mostly on the purely scientific, laboratory angle of it, but it does seem to me there are other phases that have to be considered.

It is an old saying by someone a long way back that if you want to live long, choose your ancestors; and it seems that much of the hypertension, as has been shown by many observers, does run in the family tree. I have one boy now with hypertension, only 12 years of age, and if he gets under the slightest excitement the blood pressure goes up to over 110. His father's is up to 150 and his grandfather died of hypertension at the age of 50. There are many psychogenic influences which may play a role, as well as the influences of environment and many other factors, which seem to affect the practical elevation of the blood pressure as well as its fall. We have to take into consideration all cf these extra factors.

The improvement of the home environment sometimes will help the blood pressure tremendously, where there has been, for example, trouble between man and wife, and of course economic conditions of people at work, or working under unpleasant circumstances or situations, under tension, or under unhappy environment—all that has a great role in hypertension, and these factors have to be considered. The two drugs that I think are commonly used by most of us are phenobarbital and potassium iodide, but there is no single drug nor is there any simple way.

Not long ago one of my hypertension patients called me on the phone and said: "Doctor, do you think if I consulted a psychiatrist it would help my hypertension? A friend of mine had hypertension and consulted a psychiatrist." I said I felt it would be an excellent idea, and of course we made arrangements for a psychiatrist. It is a popular subject and so many factors enter into it.

Today we have a presentation by a man who has spent seventeen years in this particular field, and I am sure he is making great contributions which command our study and our attempts to apply.

BOOK REVIEWS

New and Nonofficial Remedies, 1946, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemstry of the American Medical Association on Jan. 1, 1946. Pp. 770. Cloth. Price, $1.50. Chicago: American Medical Association, 1946.

New and Nonofficial Remedies is the book in which are listed and described the medicinal preparations which the Council on Pharmacy and Chemistry has found acceptable, under its rules, for the use of physicians. To have a product accepted the manufacturer must declare its composition, give adequate proof of its therapeutic value, and market it with claims which have been found valid by the Council. The present volume represents a cumulative epitome of the Council's work since its foundation in 1905.

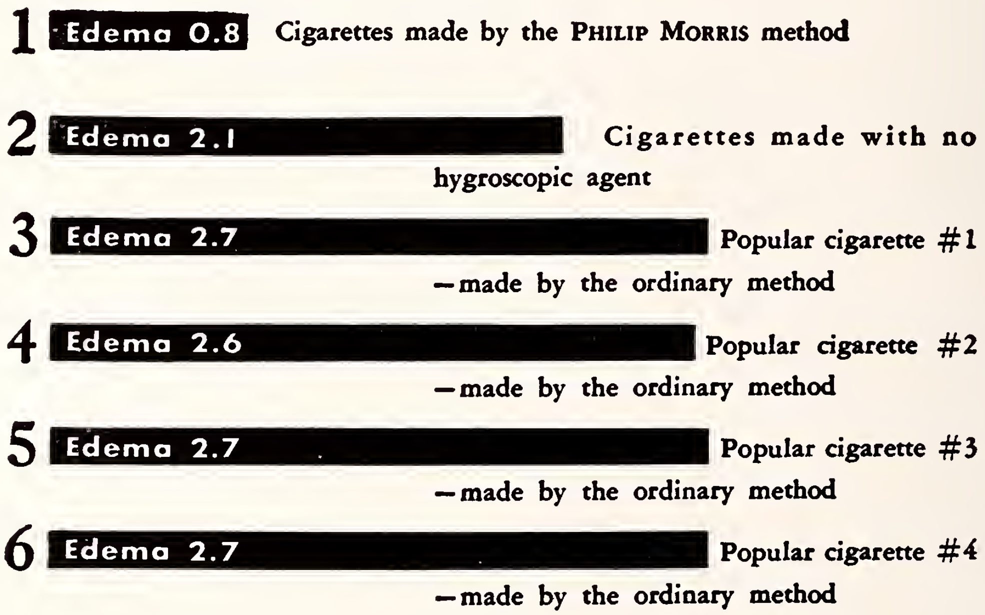
Accepted preparations are grouped in 24 classifications ranging from Allergenic Preparations to Vitamins. The monographs for the products set forth the actions, uses and dosage and usually a set of tests and standards. As its name implies, the book is intended to describe nonofficial preparations, that is preparations which are not included in such official publications as the Pharmacopeia and the National Formulary. However, some official articles are listed and described, these being in general those for which the Council feels the practicing physician needs concise and authoritative information. In the preface of the present volume, the Council lists some 35 official drugs ranging from acteylsalicylic acid to strophanthin, which the Council feels it no longer necessary to consider for inclusion in the book. However, in most cases, a brief monograph on actions, uses and dosage gives information useful to the physician and for the control and advertising of marketed preparations.

There have been no extensive or radical revisions of the general articles representing the 24 heads under which preparations are classified. A few revisions of separate monographs may be mentioned: under chaulmoogra derivatives, the recommended use of chaulmoogra oils is limited to sarcoidosis, the dosage statement for quinacrine hydrochloride has been notably expanded to reflect the war-time experience with the drug. The radically re-

(Concluded on Page 220)

How irritation varies— from different cigarettes

Tests made on rabbits' eyes reveal the influence of hygroscopic agents



CONCLUSION:* Results show that regardless of blend of tobacco, flavoring materials, or method of manufacture, the irritation produced by all ordinary cigarettes is substantially the same, and measurably greater than that caused by PHILIP MORRIS.

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**N. Y. State Journ. Med. 35 No. 11,590 **Laryngoscope 1935, XLV, No. 2, 149-154*

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the incidence of rickets is astonishingly high in children of *all* age groups. Examination of 230 children aged *2* to *14* years, at Johns Hopkins revealed histologic evidence of rickets in 46.5 per cent, with a high of 62 per cent in the 10 to 11 year old group.[1] Similarly of 943 seemingly "normal" pre-school children 90 per cent exhibited symptoms of rickets.[2]

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Editorial

DELAWARE STATE MEDICAL JOURNAL

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Farnhurst, Del.

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Footnotes and bibliographies should conform to the style of the Quarterly Cumulative Index Medicus, published by the American Medical Association, Chicago.

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Vol. 18 September, 1946 No. 9

The Annual Session

The 157th Annual Session of the Medical Society of Delaware will be held in Dover on Tuesday, October 8th, and Wednesday, October 9th. An excellent program has been prepared, which was published in the August issue of The Journal. The scientific papers cover a wide range of subjects, and will prove of interest and benefit to those who hear them. The three social affairs promise to be more than usually pleasant.

The House of Delegates will meet on Tuesday at 9 p. m. A "Full House" is highly desirable. All chairmen of committees, both standing and special, are urged to send their reports to Secretary Munson *at once,* so that the meeting may progress smoothly and expeditiously.

Finally, let us remind all our members of that famous saying of Teddy Roosevelt, to the effect that every man owes some of his time to the profession to which he belongs. This means only one thing so far as the Medical Society of Delaware is concerned—every member should attend its Annual Session.

That License Fee

In reference to the hiking of the annual medical license fee in the city of Wilmington (see editorial in the July issue of The Journal) from ten to fifty dollars, letters of protest were written to City Council by many interested persons and by the officers of the New Castle County Medical Society, requesting a hearing before the fees were finally adopted.

Accordingly, the Council granted a hearing on September 26th, which was attended by practically the entire Council and a goodly number of physicians and dentists. Excellent arguments for modification were presented, and while it would be foolhardy to predict what action Council will ultimately take. the Councilmen received our statements with respect and, in spots, sympathy. We hope for modification.

Since the license fee is due and payable in September, which is now almost gone, and since final action may not come till some time in October, the Wilmington physicians should pay the fifty dollars in September. Then, if any modification is granted, it will be retroactive and a refund will be made. If this fee is not paid in September the physician is liable for a penalty, which may run as high as twenty-five per cent. So, pay now, and hope for that refund.

BOOK REVIEWS

(Concluded from Page 217)

vised monograph on amphetamine is in harmony with the recent Council report on the use of this drug. Minor revisions of the chapter on contraceptives are noted, and one marks the appearance of many additional products. The monograph on the vitamin B complex now mentions synthetic folic acid, recently made available for investigational use; but no accepted preparations are listed.

There appear to be no spectacularly new accepted preparations. Perhaps the most noteworthy is the casein hydrolysate, amigen, acceptance of which will no doubt be followed by that of many more preparations representing the field of amino acid therapy.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1945. Pp. 122. Cloth. Price, $1.00. Chicago: American Medical Association, 1946.

Originally intended chiefly as a repository of its reports on rejection of preparations found unacceptable for inclusion in New and Nonofficial Remedies or of status reports on products whose therapeutic value has not yet been established, this volume in recent years has been composed mainly of reports giving general information to the physician on the status of various therapeutic agents and therapeutic procedures. Most of these reports have previously been published in the *Journal A. M. A.*

The report "Dermatophytosis: Treatment and Prophylaxis," gives a concise estimate of progress in this field and sets up useful standards for the evaluation of fungicidal preparations. The report on "Dangers From the External Use of Sulfonamides," obviously stems from war-time experience and issues a warning against over-the-counter sales. The report "Status of Poison Ivy Extracts" emphasizes the fact that these preparations are to be used in prevention rather than treatment. The report on "Acne Bacillus Vaccine" points out that this preparation fails in most cases clinically to arrest or control acne vulgaris. In the report "The Status of Passive Immunization and Treatment in Pertussis by the Use of Human Hyperimmune Serum," the status of these preparations was definitely outlined just prior to the acceptance by the Council of a number of commercial preparations.

This volume is of interest not only to physicians but also to pharmacists, chemists, and pharmaceutical manufacturers — in fact, to all who are interested in the progress of drug therapy.

The general hospital plays a very important role in the organization for the fight against tuberculosis as it offers facilities necessary to tie together the agents of research, prevention and treatment. But many general hospitals refuse admission to patients afflicted with pulmonary tuberculosis and many insist upon the removal of patients whenever diagnostic study discloses the presence of this disease. Public health education has accomplished much by way of removing the barriers of prejudice which formerly restrained general hospitals from accepting tuberculosis patients and modern methods in the control of infection have made possible a certain degree of intercommunication among patients with various types of illness without danger of cross-infection. Consequently, it is entirely feasible for general hospitals knowingly to accept for treatment patients suffering from pulmonary tuberculosis.—*Hospital Survey News Letter,* Feb., 1946.

During the period of the war, there occurred in the United States more than two deaths from tuberculosis for every three lives lost in combat by the armed forces of the United States.—J. Yerushalmy and L. M. Moriyama, *Public Health Reports,* April 5, 1946.

Mass surveys of chests with X-rays often find, but do not necessarily identify, disease. —Editorial, *The Ohio State Medical Journal,* April, 1946.

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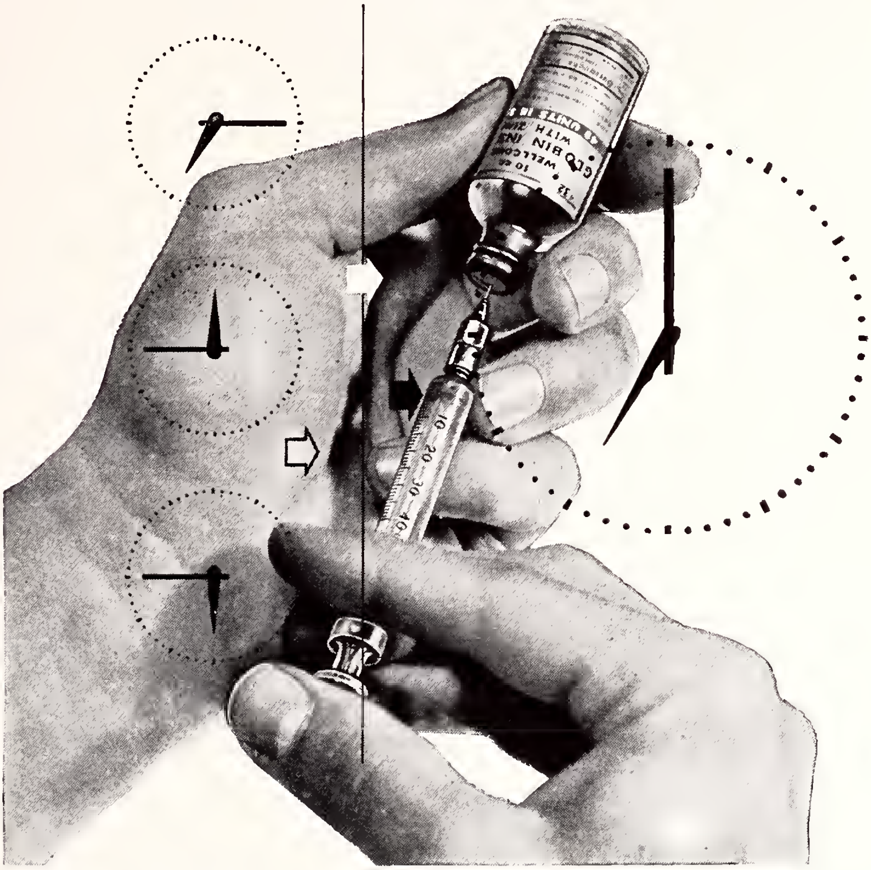

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Feinberg, S. M.: Allergy in Practice,
Chicago, The Year Book Publishers, Inc., 1944, p. 502.

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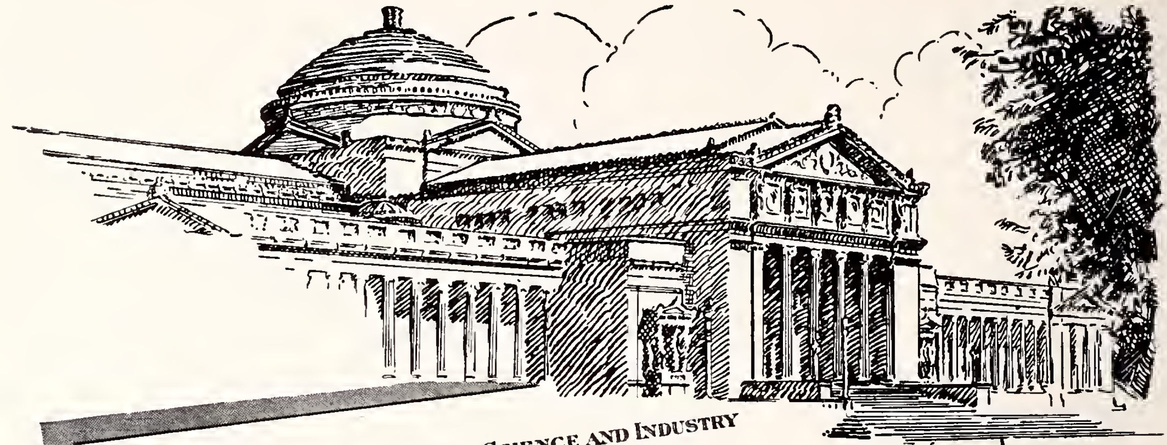

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I vividly recall the premier of the Transparent Woman at Rockefeller Center in New York City before a distinguished assembly of physicians, scientists and educators. Its later tour throughout the Nation under the auspices of state and county medical societies and academies of medicine was a significant contribution to public health education. You are to be congratulated not only on your sponsorship of this important and effective exhibit but also on the ethical manner in which it was presented to the laity through the profession.

The Transparent Woman continues to be one of the major centers of interest at the museum. Practically all of the 1,026,250 visitors last year made her acquaintance and preliminary 1946 figures show the attendance running higher.

It is fitting on this 10th Anniversary of the Transparent Woman exhibit to again express our appreciation to you for your active interest in the Medical Section.

Cordially yours,

Eben J Carey,
EBEN J. CAREY, M.D., Curator,
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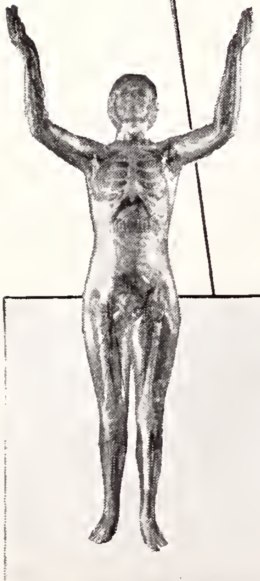

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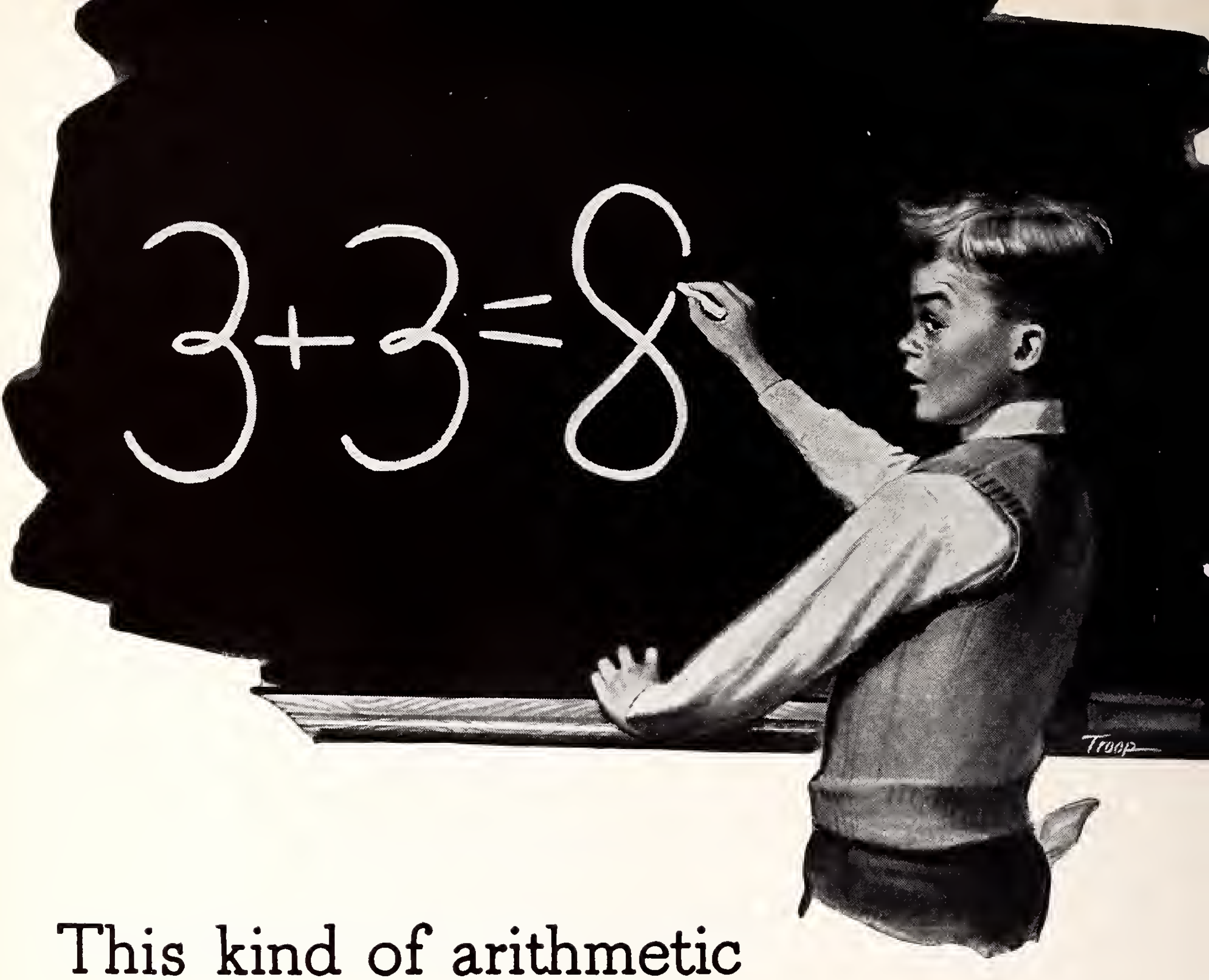

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(1) It carries on a continuous educational campaign throughout the State to interpret to its citizens the accomplishments and needs of the Delaware State Hospital, the Mental Hygiene Clinics, the Delaware Colony, and other Delaware institutions and agencies dealing with mental hygiene and emotional problems.

(2) By talks, discussion programs, newspaper and radio publicity, the Society strives to remove the stigma, in the minds of many people, connected with the problem of mental disease in their families, and urges early diagnosis and treatment.

(3) Organizes mental hygiene programs for educational, nursing, social work, Red Cross, religious groups, women's clubs and service clubs in Delaware.

(4) Is engaged in a five-year research and demonstration program to see if transferable techniques for use by teachers with school children can be discovered which will assist in raising the emotional maturity of the average graduate of the schools in this State.

(5) Conducts demonstration Human Relations classes in schools throughout the State to give teachers and school administrators practical experience in mental hygiene problems in the classroom, and at the same time to give children in these classes a better understanding of the important part emotions play in their lives.

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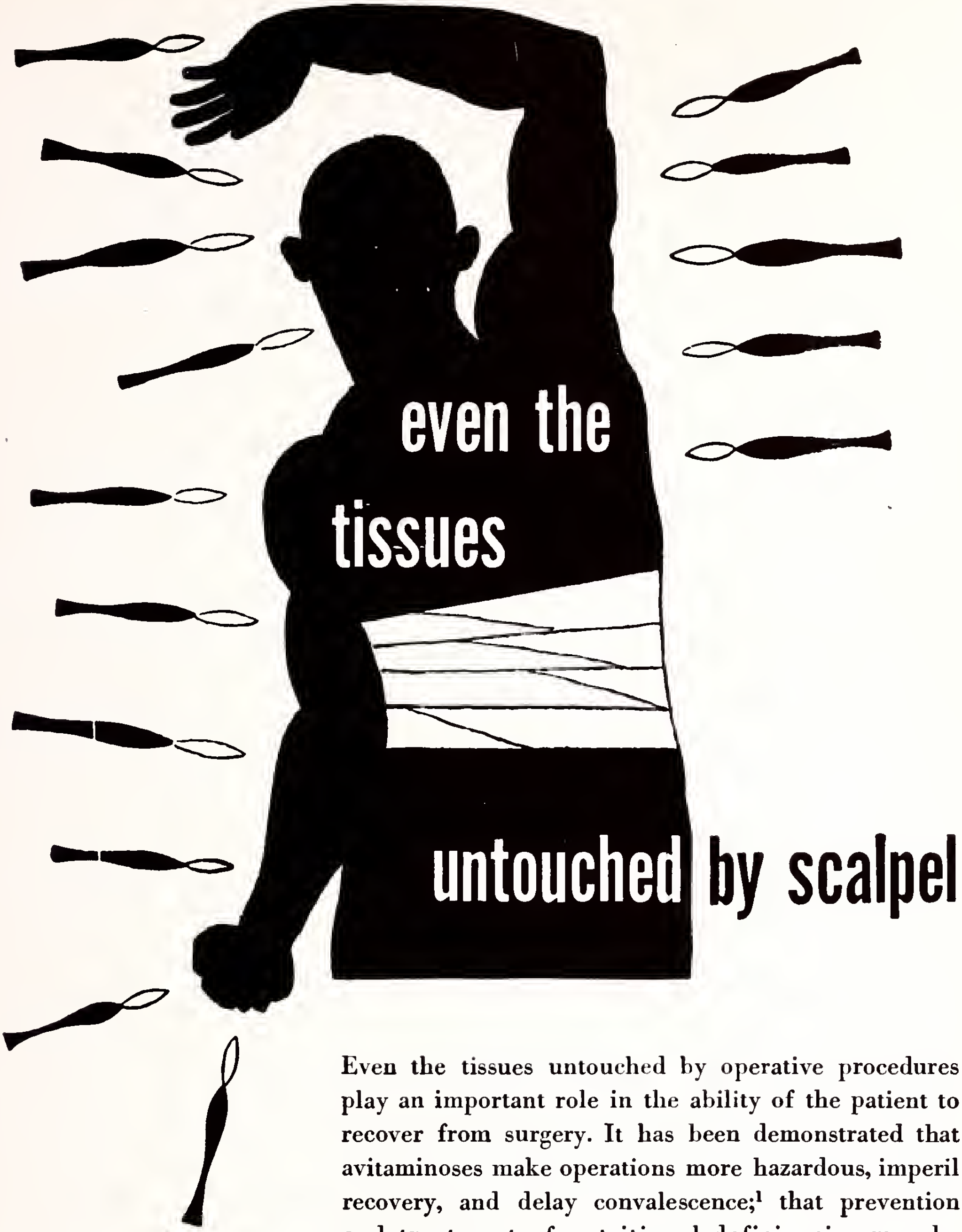

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1. Virginia M. Monthly **72**:240 (June) 1945.
2. Am. J. Surg. **54**:299 (April) 1942.

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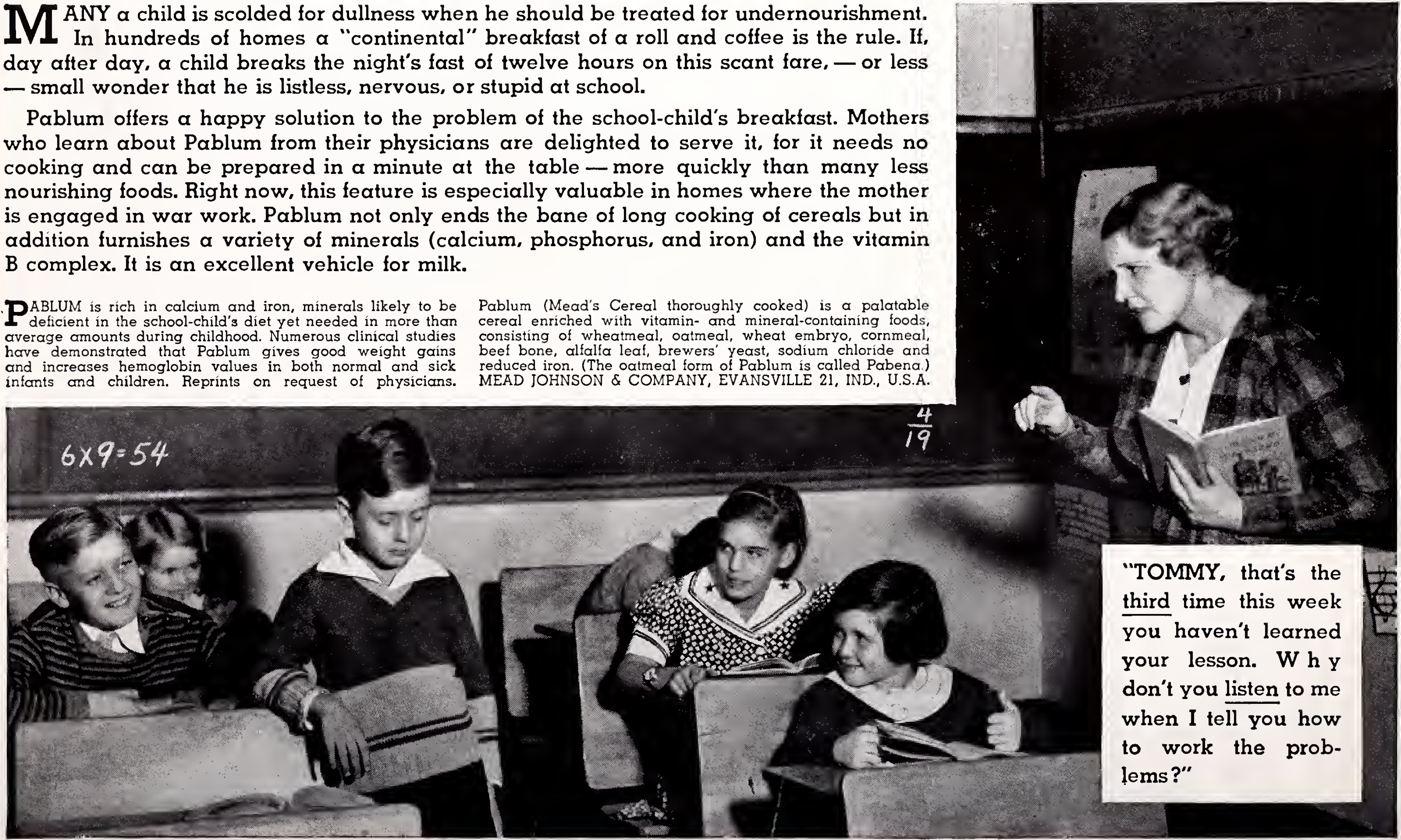

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INCORPORATED 1789

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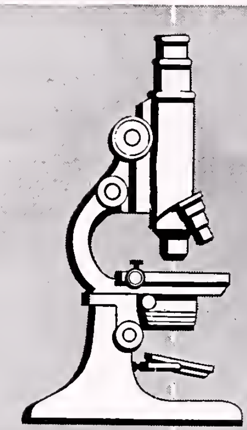

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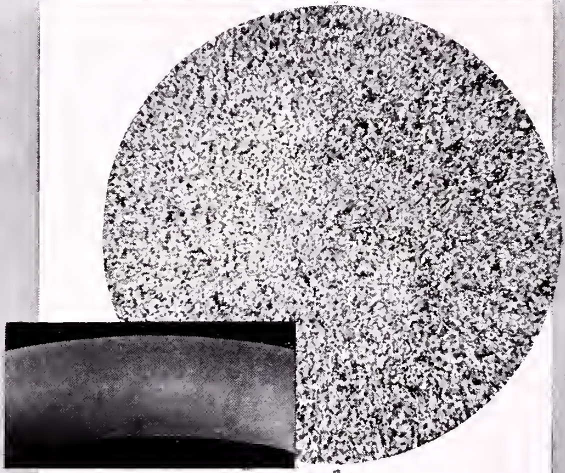

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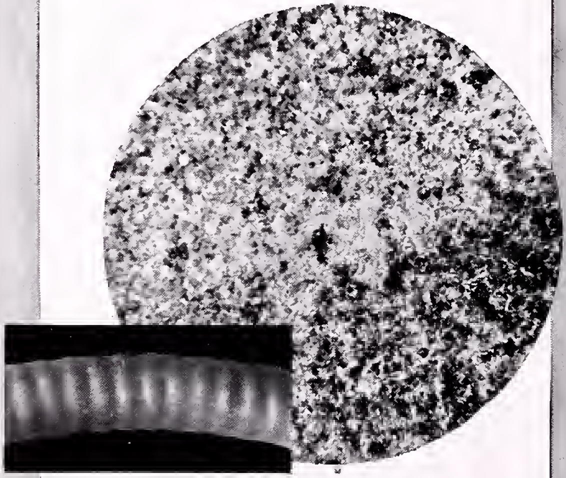

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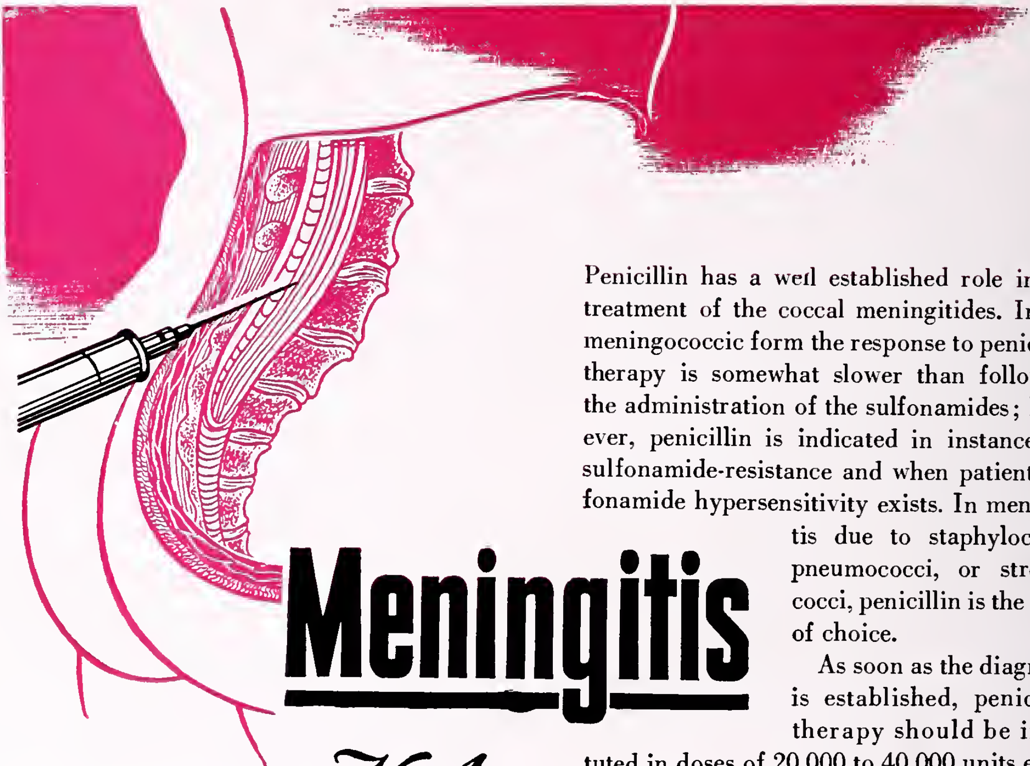

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No. 4

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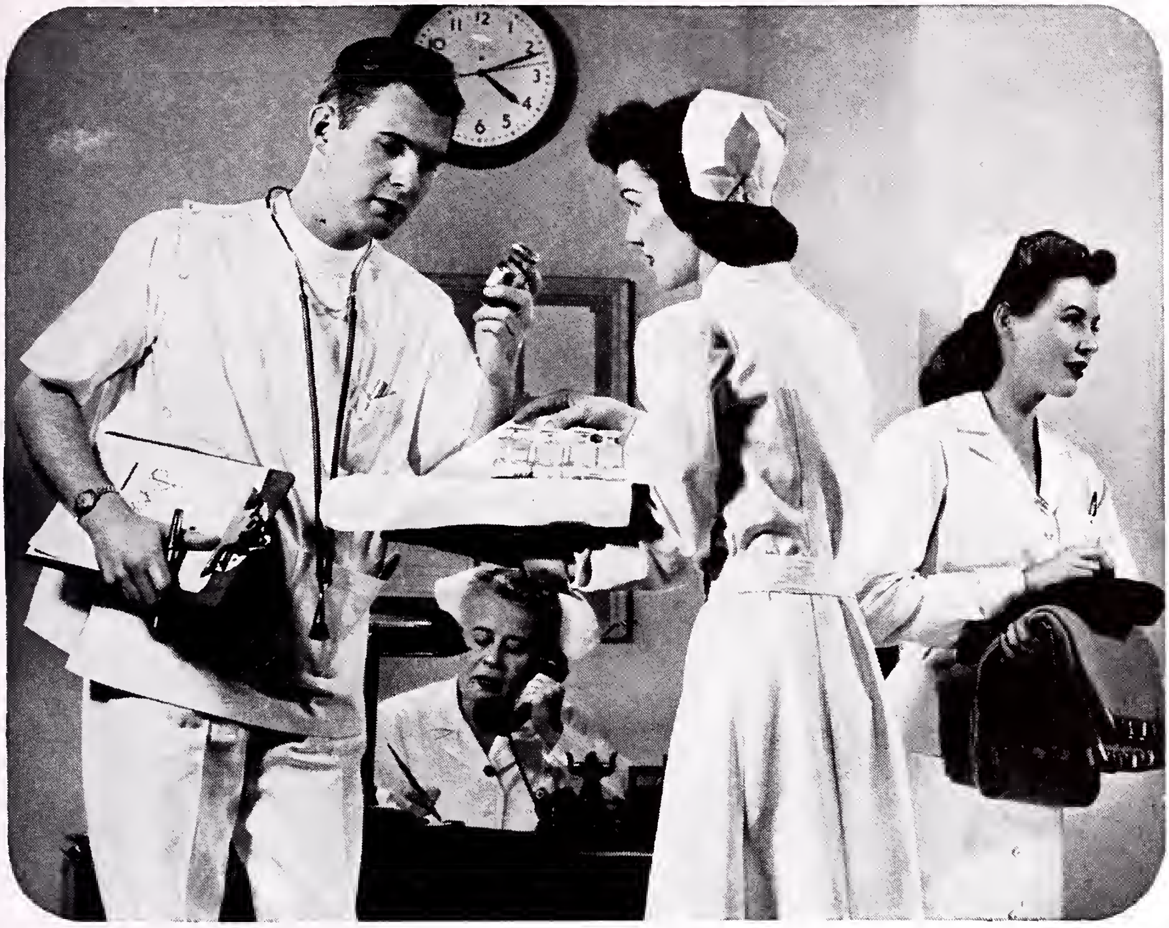
SPINK, W. W., and HALL, W. H.: *Penicillin Therapy at the University of Minnesota Hospitals: 1942-1944, Ann. Int. Med. 22:510 (April) 1945.*

WHITE, W. L.; MURPHY, F. D.; LOCKWOOD, J. S., and FLIPPIN, H. F.: *Penicillin in the Treatment of Pneumococcal, Meningococcal, Streptococcal, and Staphylococcal Meningitis, Am. J. Med. Sc. 210:1 (July) 1945.*



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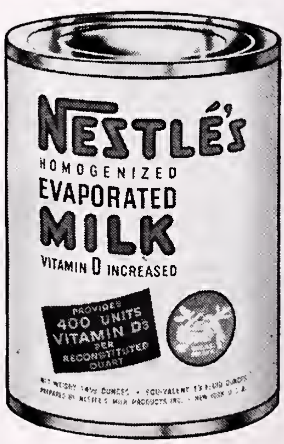

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REFERENCES: 1. Cornbleet. T. and Pace, E. R.: Arch. Derm. & Syph., 31:224, 1935. 2. Hansen, A. E.: Am. J. Dis. Child., 63:933, 1937. 3. Taub, S. J. and Zakon, S. J.: J. A. M. A., 105:1675, 1935. 4. Stoesser, A. V.: Ann. Allergy, 2:404, 1944.

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1. *Lennox, W. G. (1945), Petit Mal Epilepsies: Their Treatment with Tridione, J. Amer. Med. Assn., 129:1069, December 15.*
2. *DeJong, R. N. (1946), Effect of Tridione in the Control of Psychomotor Attacks, J. Amer. Med. Assn., 130:565, March 2.*

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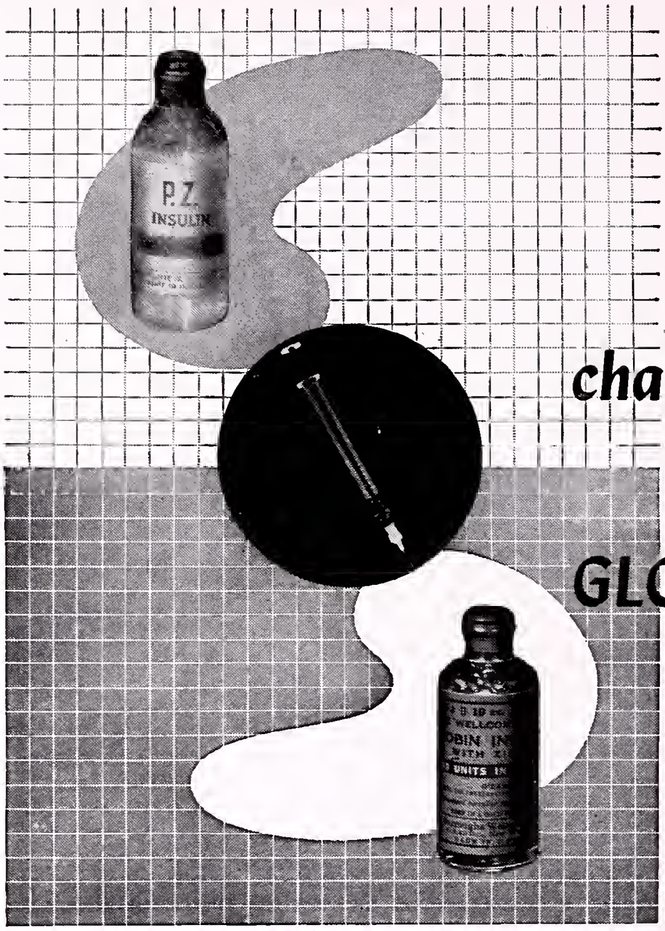

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[1] Watson, B. P.: J. Clin. Endocrinology 4:571 (Dec.) 1944.

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Shambaugh, G. E., Jr.: J. Iowa M. Soc. 31:373.

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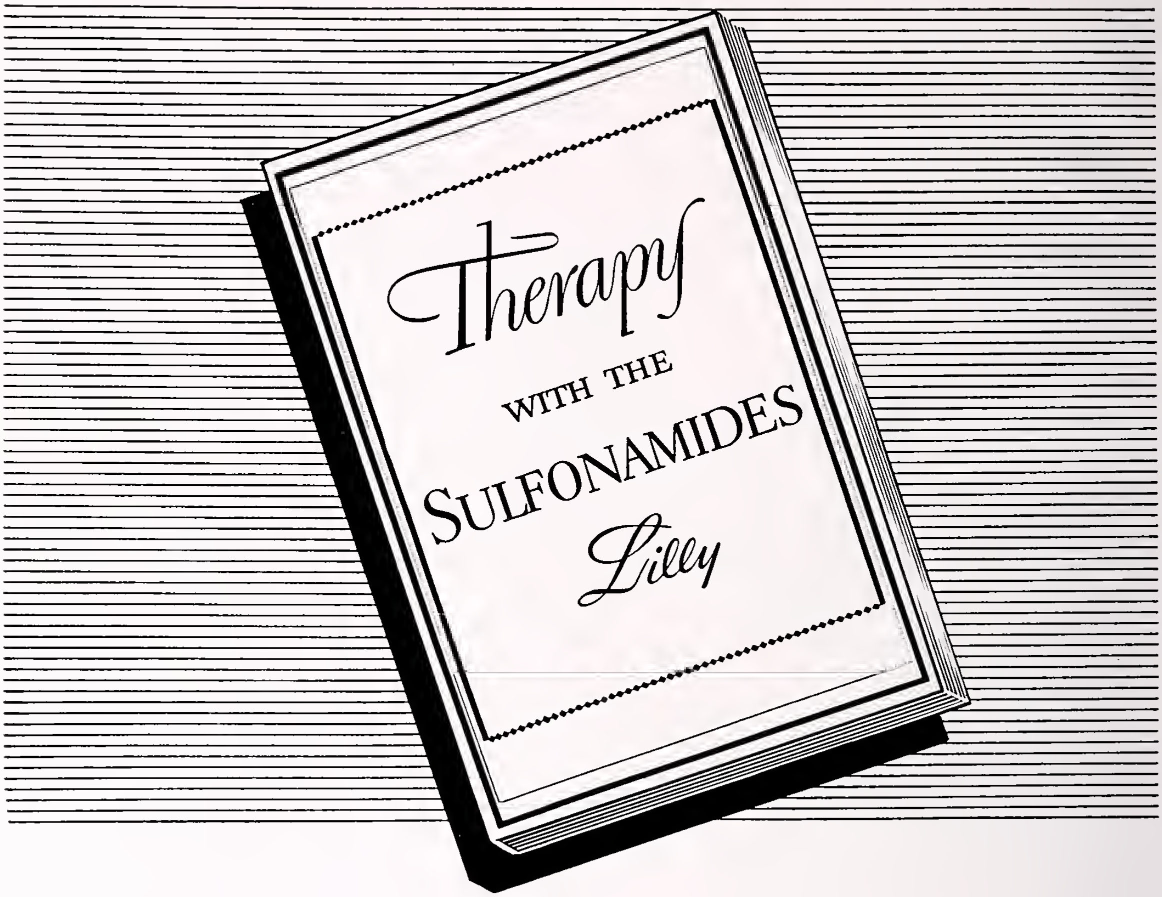

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1946

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DISSEMINATION OF INFORMATION TO THE PUBLIC ON THE IDEALS OF MEDICAL CARE*

W. C. Deakyne, M. D.
Smyrna, Del.

This is the first year since 1941 that we have had the pleasure of welcoming most of our colleagues who left their practices for war service. Their record in preserving and restoring the health of our armed forces contributed largely to another brilliant chapter in the annals of American medicine.

Less spectacular, but perhaps no less important to the health economy of the nation, was the work of those who remained in private practice and assumed added burdens in serving the medical needs of the home front.

Without exception each has performed his services at home and abroad with unstinting devotion to the ideals of medical care, and each of us has had his part in the advances which have continued to make American medical care the best in the world.

A careful examination of the record of American medicine in comparison to medical standards and achievements in other countries which have experimented with state medicine shows that our advances are largely due to the ideals which govern us in our private practices and to the close personal relationships which exist between each doctor and his patients.

But there are grave threats to all that we have achieved, and all that we as guardians of the public health stand for.

During the term of my office as your president the issue of state medicine versus private practice has been brought into sharper focus. Whether we shall eventually have some form of government-administered compulsory program for medical care, with its attendant dangers of political manipulation, and deterioration of all that we have built up through years of progress, rests largely upon the extent to which the public understands the issues involved.

We would, therefore, be remiss in our duties to the public if we were to fail to use every means available for the dissemination of truth, initiating educational programs where necessary and aiding in the expansion of existing programs, working closely with all other agencies whose aims coincide with ours, and assuming all responsibilities that are rightfully ours by virtue of our obligations in matters concerning public health.

The basis for all health education is medicine, and we as a profession must continue to lead, in our communities, in our state, and in our nation, in the development of whatever procedures are necessary to reach and inform all of the people.

It is with the means of making that leadership effective that I am at present concerned. What avenues are open to us, in Delaware particularly, through which we can reach and influence for the public good every segment of public opinion?

One of the most potent factors in establishing truth firmly in the public mind is the public school. Administered by state government, free of political interference, and independent of any hint of bias, the public schools of Delaware stand high in the quality of their personnel and educational facilities. While it is within the province of no special group to attempt to shape the courses of instruction to their own ends, it is entirely proper for professional and business groups to offer their full cooperation and counsel both to the Department of Public Instruction and to the local school officials. It would, for example, be both proper and desirable for us to explore all of the sources of materials dealing with questions affecting public health and welfare, secure and collate these materials, and pass them on to the various schools for classroom and reference work. It would further be desirable and proper for us to organize and furnish educational programs, utilizing one or more of the following means of instruction: exhibits, motion pictures, dramatic presentations, stereoptican slides, lectures, printed material upon which students can base discussions, debates and reports, and recordings of radio programs. Wherever feasible in connection with the established health programs of the school, we should sponsor contests among the students, giving suitable awards for merit in such activities as the making of posters, the writing of papers on selected subjects, and the completion of projects in certain specified health fields.

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* Presidential Address, delivered before the Medical Society of Delaware, Dover, October 9, 1946.

Close cooperation with the schools lays a solid foundation for improvement in the overall, long-range health picture, besides paying immediate dividends in assuring to the medical profession a continuing leadership in all matters pertaining to the public health. Such cooperation reaches not only the children directly involved: it also results in an increased awareness on the part of all parents and all educators of the willingness and the ability of this profession to render vital services obtainable from no other source.

As for those persons who are already out of school or who may have lacked school opportunities, we have an obligation no less great and one possibly more difficult of fulfillment. Certainly we shall have to avail ourselves of the most modern and efficient methods of getting and holding the interest of the people who need information on subjects such as prepayment plans for medical and surgical and hospital care, and the services already available to them, and to be made available, without the need for federal interference or penal compulsion.

First I suggest that here in Delaware we bespeak the cooperation of our radio stations and of our newspapers in performing the great public service of informing our people. I do not consider it necessary to take paid space in the press nor to pay for time on the radio. The editors of our papers and the directors of our radio stations have, in common with us a sincere desire to serve the best interests of the people. It would be our duty to furnish authentic information in a form acceptable to the media using it, keyed to public interest and need, and devoted to health education, which, in the final analysis, must include such things as health insurance plans and hospitalization plans. It would be the pleasure of the owners of the various media to fulfill their public duty in seeing that these materials were presented to the best advantage. A practical manual of technic and authoritative guide to the medical profession in the use of these and other means of reaching the public has been prepared by W. W. Bauer, Director, Bureau of Health Education, American Medical Association, and Thomas G. Hull, Director, Scientific Exhibit, American Medical Association. This volume, entitled "Health Education of the Public," will prove invaluable in carrying out any of the suggestions made in this paper.

We should not overlook the value of exhibits as a means of interesting people in health matters, supplemented by other miscellaneous devices such as leaflets, pamphlets, and posters. Exhibits should be readily transportable, expertly designed and supervised, and should accentuate graphic presentation rather than verbal. Good exhibits call for expenditure of time and effort, but unless the exhibit is good it will be entirely worthless in catching public attention. The ideal exhibit is artistically attractive, tells its story simply yet forcefully, with nothing to detract from its unity of purpose, its main idea. The traveling exhibit would seem to be of the greatest use as the one best calculated to reach the greatest number of people. Such exhibits, housed in trailers, could cover the entire state. Other exhibits would have their place in the windows of cooperating drug stores and other places of business, at various conventions, at fairs, and at public gatherings.

It would be well to discuss the advisability of sponsoring public gatherings devoted to public health matters. Such gatherings can be successful if adequate advance publicity is secured, if the public is assured that the speaker or the manner of presentation of the material will be interesting, and if the chairman is skilled in conducting meetings in such a manner as to increase the prestige of the sponsors. Lectures, with or without illustration by slides or by motion pictures, still have a vital place in molding public opinion. Lectures sponsored by our association will be effective only to the extent that we are willing and able to give the time and perform the work necessary for success.

We should, it seems to me, take advantage of every opportunity to furnish speakers for the numerous groups of persons who are eager to obtain good speakers. Such opportunities are constantly recurring in every community throughout the state. It might be worthwhile to establish within our society a speakers' bureau whose function would be to list available speakers from our profession, to receive requests for speakers, and to meet these requests.

In all of our public relation activities we should work closely with every group which logically is allied with us, for example, with the State Dental Association, with the State Department of Health, with the State Nurses' Association, and with the State Pharmaceutical Association.

We must all of us be constantly aware, both in practice and in social and civic contacts outside our profession, of the many opportunities for giving information on vital issues in informal conversation.

We must likewise take advantage of the opportunities for aiding legislators to arrive at informed conclusions on all issues in which they have, or conecivably might have, a legislative interest. Besides personal contacts with our state leaders, it is highly desirable to initiate and maintain a correspondence with each legislator in and from Delaware, and with other responsible public officers. Such letters should be written not only by duly appointed officers of our society, but also by individual members. The personal letter, sent to the right person, is one of the most valuable means of securing intelligent cooperation in the furtherance of our aims.

It is evident that a comprehensive effort to educate the public on the ideals of medical care calls for the fullest possible expenditure of both time and money. Yet it is my sincere hope that due thought will be given to this most important matter of forming public opinion through the improvement of public relations, and that detailed plans will be made, and carried out, to the end that the public will continue rightfully to acknowledge the leadership of the medical profession in everything pertaining to their health.

MENTAL HYGIENE IN CHILDREN*

Frederick H. Allen, M. D.,
Philadelphia, Pa.

The title of my talk indicates its very broad nature. Here we are not dealing with just matters of medical concern; we are dealing with matters of broad social, educational concern. In no other area of professional practice is there greater need for a broad understanding of the nature of childhood and the variety of forces that need enter in the child's life, to assure him the healthy opportunity for growth and development. Here we have the opportunity of that highest type of professional collaboration with all those other resources that the community provides, to assure opportunities for its children to grow up and to achieve a sense of their own worthwhileness and a sense of their own individual responsibility.

Mental health involves the operation and the inter-relationship of two universal forces that operate in the lives of every human being. I should like to characterize those two forces as the biological and the social—the biological factor characterizes each human being as an individual and operates through life, to preserve the integrity of the individual.

Operating together with these important biological forces, we have the cultural or social forces that provide the framework which defines for each human being how he can be an individual among other human beings. On the one hand we have forces with the goal of individualization and, on the other hand we have forces that regulate and provide the framework and determine the codes of behavior that help that individual not just to be something within himself, but also how he can be a member of the group.

There is always some conflict between these two forces because the biological forces aim at preserving the individual while the social forces in the form of codes, conventions, and custom seek to regulate and to interfere to take away individuality.

The conflict factor may become dominant and lead to many of our clinical problems, and draw attention away from the basic definition of mental health as the balance that gradually is established in the life of every healthy human being, between these two important forces. This balance means the harmony in the individual with the group in which he lives, and which in turn as it recognizes the all-importance of the individual, develops its codes to give that individual the widest opportunity for creative living.

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* Read before the Medical Society of Delaware, Wilmington, October 9, 1945

The operation of these forces in the life of a child can be observed most clearly because a child starts life as a physiologically integrated unit capable of independent living, but needing a setting which shapes and directs the emerging self of the child. We see, therefore, in the growth of a child evidence of the duality of human nature—a self that is created out of the child's own living and experience developing alongside the self that is created by the mother. Biologically he becomes an individual but he does so under the directing influence of the family when he becomes, at the same time, a member of the group.

You find, therefore, in the life of the child, the interplay between these two forces that I have spoken of, taking place in the setting of the family.

For sake of clarity I will try to illustrate through a simple linear diagram changes that take place in the infant: One characteristic factor of the infant is that he acts on impulse. He has not learned out of his living the way to give purpose and meaning to the things he does and wants. We might just take a linear line like this:

Impulse —————————— Inhibition

to indicate the whole course of the individual development. The infant starts at the left with a capacity to act on impulse a total type of response. Impulse gradually gets meaning as it has purpose and direction which cannot come from the child, but comes out of the direction. These provide and enables the infant to have an experience in adapting himself to others, and others to him. In the course of development the impulse undergoes some inhibition and in the more partial responses that emerge purpose and meaning comes into his living.

This inhibition process can go clear over to the extreme right on our line if we think of the social forces acting upon the child and giving only correction. We can conceive of those social forces being so rigid and inelastic that the child is so repressed that he has little opportunity to learn the value of what he can be as an individual. He becomes a robot and not a person.

Mental health is achieved in the individual when there is a balance established between impulse expression and control.

At the two extreme ends of the scale we find two of the most prominent types of clinical problems—the delinquent and the neurotic. For example if a fifteen-year-old boy still acts just on impulse and is concerned only with what he wants and seeks to get it, irrespective of the rights of others, then we have a form of behavior that is commonly called delinquency. Such a person has not learned to live in harmony with the group and has not been able to give up part of his individuality which all group living requires.

If this same fifteen-year-old boy is so inhibited in his responses, either because of the inelastic demands of the group which allows little individuality or because of the rigid demands he makes on himself, then the resultant behavior patterns are neurotic in character.

As I said a moment ago, it is the family that provides really the setting in which the child has his first living experiences with others and when the first definitions of himself take place. The family truly does represent the cultural workshop. Here the infant gradually emerges as an individual who has capacity to be different from anybody who has preceded him, and who will never be duplicated again. But at the same time he learns that he is like others and has a common base with them.

So in any consideration of mental health we do have to give our primary consideration to the kind of emotional climate that exists in family life. Within the setting of the family the child is born. Here he has his first contact with the world he is going to live in; here he has his first awareness of being a person in his own right and here the parents of the child have the opportunity and responsibility of directing his growing up and helping him to achieve a healthy personality. Through their love and direction they provide the setting in which he awakes to the realization he is not just a robot, not just a precipitate of other people's desires or plans, but where the child discovers he has a new creative force within himself, gradually becoming capable of independence and becoming a socially responsible individual.

Now it is my experience in working with parents and children who have gone through the turmoil of finding their way of living together, that most parents want this type of responsibility, or responsible development in their children. It is true, that some parents want this with such intensity that they find themselves caught in the trap of their own desires. We all know from our experience with working with families that some parents take their responsibilities too seriously, just as others err on the side of neglect. The ones who take their jobs too seriously tend to smother the child in their zealous efforts to be good parents, while those who neglect and give little of themselves to their child deprive him of the affection and direction which are as essential as food and shelter. It is a significant fact that the war period through which we have just passed, has focused even more than before the great importance of preserving the family structure. These have been trying times for everyone but particularly for children, even in this country which has been spared many of the devastating effects of war. We have had mass dislocations of people, families broken up and the normal balance in the family has been disturbed by fathers being away at war and mothers going to work.

It has been my feeling that out of this period we have had our belief in the sturdiness of children reawakened. We have learned a great deal more about their needs—but what seems to me more important, we have learned, too, a fuller appreciation of a child's capacity to reach out and satisfy some of these needs. There has been some renewal of the spirit of the pioneers when the child was included in the new and dangerous life they were seeking. It really has been a rather illuminating discovery for many to know that children can still face danger and not be overwhelmed by it. But, at the same time, we have regained, too, a sharper appreciation of the areas of adult responsibility for providing the child with a framework within which he learns and feels his developing strength which the parents must provide.

It might be worthwhile to take a glimpse at some of the factors that really make a family strong.

There is one outstanding fact that impresses me, and that is that individuals who constitute the social unit, that society has named the family, are different. Man is different from woman; woman is different from man, and the child is different from the adult. At first glance this might seem to be a source of weakness and the natural question arises as to how unity can be achieved in the face of so much difference. And there certainly is ample evidence to show that in many families this unavoidable reality is a source of weakness and the cause of family breakdown. But we must not overlook and be blind to the fact that in the normal, healthy family, this same fact of individual differences becomes the real source of its virility and strength. This healthy result is achieved when individuals who create the family unit by their living together, show in their actions and feelings a respect and belief in each other. The result of such self-esteem, where it is real self-esteem, carries with it the respect for others who are different from them. The man first becomes a husband and then a father and brings to these roles values he has acquired about himself in his own development and is in a position to contribute one of the foundation stones of the family structure. And so it is with a woman who comes to respect her own individuality first in the role of a wife and then as the mother, so as to give freely and spontaneously of her self as a woman in the new responsibility she has for a child she has created and provides another one of the foundation stones of the family. Out of the reality of their differences as man and woman grows a love and respect for each other; and which rests fundamentally on their respect for these individual differences. In such a family unit a good healthy give and take emerges. They can agree and disagree without having their own individuality threatened. Only insecure people are afraid to disagree and who insist on always being right. It is such a great relief to a human being to know that once in a while he can be wrong.

A boy who was trying too hard to duplicate in his own living the achievements and accomplishments of others stated this quite accurately. Feeling always the need to duplicate in his own experiences that which others had found of value had put a heavy burden upon the child, and he said to me one day as he was really beginning to acquire a more natural feeling about himself, "Isn't it grand once in a while to be wrong?"

I want to move on to some of the practical problems to which we can apply these general principles.

One of the questions which the physician is most frequently asked concerns the question of discipline. We need in our own professional work to know that discipline essentially is a positive feature of living. We usually associate the word with its more negative components. I think it is true that anyone can get external conformity from a child. Once a facetious remark was made which holds a great deal of truth—"Any one can make a child conform; all you have to do is call out the militia." That, in a sense, sums up the more negative aspects of discipline, which is concerned only with conformity.

It is interesting to look at the derivation of the word "discipline"; it comes from the word "Disciple"—looking up to another, learning from another; with whom an emotional relation is being established. The word conveys the need that the child has for another; the need that he has for guidance and leadership. From the parents he learns both the opportunities and the boundaries of his living, what he can and what he cannot do. In discipline we are not just concerned with restrictions and prohibitions, but mainly concerned with the definition of the realities of living.

I know the word "discipline" has fallen into disrepute, partly because of the overemphasis of the "restrictive," and in some quarters it is regarded as an outmoded concept. We hear a great deal of the child's "need for freedom"; and probably no word in the English language is more subject to misunderstanding than is that word "freedom."

We have the so-called "Modern Parent"—and I use that in quotation marks—who feels that discipline is something that is old-fashioned. So when a child breaks a piece of bric-a-brac or smears the wall with paint, there is a common expression abroad that that is merely a child giving expression to childish interest.

It is just around events such as that that a parent has an opportunity of acting naturally and defines for a child what he can and cannot do. He becomes a social force needed by the child.

A normal parent is not just repressing the assertiveness of the child. He wants to help the child to find a natural use of this quality and that yielding to the authority of others can be done without losing their capacity to assert.

When we ask the question "What do we want for children?"—the quick answer to this question is frequently the use of the word "security," a word that has undoubtedly permeated our language about children in a way unequalled by any other word. It does convey a human need and a desire of a democratic society to provide conditions that will enable the greatest number of children to achieve this feeling. Particular prominence, then, has been given to the concept of security in our thinking about children. We see it in every book and in every article; and again, the war has brought that out, because, again, the war has created so much insecurity. So frequently we hear the advice given to parents—sometimes without real thought as to its meaning—"You must give your child security."

Now the great amount of truth focused in this word has again been clouded by a great deal of misunderstanding of the word and of its concept. This word describes a feeling an individual achieves within himself; it does not just refer to a condition of living which can be provided or purchased. It is true that the conditions of living bear a close relation to the development of the sense of security, but the feeling is achieved in each individual, through his own use of and participation in the conditions provided for him. Conditions alone can never give rise to the feeling.

A parent recently said to me, "I must give my child this feeling of security"—acting, you see, on the common concept. Thousands of others are saying the same thing. It was interesting, as I asked that parent, "Can you?"—and then added that if you can give your child a feeling of security, you can also take it away; and thus in the very giving, lay the foundation of insecurity. And the parent thoughtfully reflecting on this, said, ''I begin to see where I have been providing my child with safety; not security.''

I think this sums up some of the confusion that has developed around this word and psychiatrists have made their contribution in adding to this confusion. Only as we in our professional practice and contact with families know the difference between security and safety, can we help the parents to a more natural fulfillment of their role and a development of confidence in themselves that enables them to build a decent life for the child and give him a chance to acquire a feeling of security out of own living.

Common sense dictates a necessity for protecting children from things they cannot meet on their own, a need to provide a framework of growth, enabling to acquire this feeling of security; but it is important that every child gains that feeling of security out of his own living, out of his own experiences—not just through what people give him.

To fully apply this concept about security means a considerable revision in the thinking about children. In the last two decades we have developed an overprotective attitude about children that falls short of recognizing the quality of strength which they have, and which really becomes real strength when they have the opportunity of expressing it and living it within a reality that gives direction and boundaries to it.

We are learning more and more about the needs of children; but I want to state again that one of the child's most fundamental needs is finding through its own living, the most effective and responsible ways of being himself, and an opportunity to be aware of having a need; then being helped to utilize his developing capacity to satisfy those needs. This capacity is unorganized in the early period of infancy but each day of living provides the opportunity to do more and more with less and less direction from those who must give it.

We must build our services and protections around this basic fact; the very basis of growth means that a child can never discover values in isolation. Living involves relationship with others—and that is a part of the journey toward self-fulfillment. Both the child and the parents are interwoven in this journey of growth, and each will use the knowledge, will use the services of the others, to attain their ends. They will use the services of the physician, of the educator, of the minister, of the social worker—of all those who build up the constructive resources of a community provided to supplement and enable people to have a more creative life. They can use this knowledge to come into conformity with essential standards without feeling that loss of individuality or the loss of their own integrity—but rather gain an enrichment because of becoming a real part of a larger whole.

In the days that have just passed, and undoubtedly in the days just ahead of us, there will be combatant forces in the world that seek to level out all individual differences and to mould a standardized child, who will become the adult robot, ready to think what someone tells him to think, and act according to a standardized pattern. We have seen too much of that in the world, and we have not gotten rid of it yet.

The thing that we as professional people need to stand for and to advance our professional services is that desire for children who have learned out of their own living the values in being individuals, who are being free to think and act as individuals, knowing the real values of solidarity in a social order of which they are an integral part. Then they will contribute of their courage and their strength to maintain a society that guarantees an opportunity for them to fulfill the most essential needs of everyone, the need and right to be an individual, irrespective of race or color—but not just an individual, but one who is united and capable of living with others. Then we have a society; then we have a concept of mental health, that is based upon the unity and upon the strength and responsibility of people, and only then do we get the true source of unity.

Discussion

Dr. M. A. Tarumianz (Farnhurst): I am sure you all enjoyed Dr. Allen's paper. I know I always have admired Dr. Allen's presentations, because he is not only a good psychiatrist and mental hygienist and a good physician, but he is a good philosopher as well. In fact we in our psychiatric association have so accepted him and have so named him, or nicknamed him a "good philosopher," in addition to being a good physician.

I think Dr. Allen described the two most important factors that we should realize and consider at all times, that is, that a child certainly, as a biological organism, has to depend a great deal upon his outer environment. We can expect a reasonably adequate outer environment from the society in which we find ourselves at the present time, yet a large number of parents are not sufficiently intelligent, or, if they are intelligent, they are not properly and adequately prepared to assume their responsibility to create such an outer environment. Something that we should consider very seriously, therefore, is the matter of these children who do not have the opportunity to have such an outer environment. They have to obtain such an environment, then, in the schools, the public schools. Therefore, I have only one thing to add to Dr. Allens' presentation, that it would be essential for the public to realize the importance of education, public school education, and the advisability of the proper selection of teachers in our public schools.

For years we have tried to impress upon the people that human relationship must be created in the school, more so for the vast majority of the people who do not have the background for creating such an outer environment within their home.

In addition, I may say that at the present time we all recognize that mental security has very little to do with safety, as was so splendidly brought out by Dr. Allen. It seems to me that when we talk about security at the present time we really mean safety rather than security. Confidence is the foundation of mental security. To instill in the child confidence in himself we should impress on him the realization or recognition of his positive traits. They are the qualities which he should exercise instead of exercising the negative elements of his personality.

Dr. C. E. Wagner (Wilmington): I wish to thank Dr. Allen for his clear presentation of the subject. I happen to be dealing with children and do appreciate the very sensible viewpoint he takes in these matters. I think parents these days are inclined to want to escape this responsibility and often try to delegate it to the church or the school, and while the churches and schools are trying to do the best they can they cannot direct the children properly under contact, and I always have felt we should take the attitude toward our children that animals take toward their young; they always try to teach their children which is the proper way to get along in life, and at times I think as parents people are inclined to try to direct that responsibility to other people when it should be in the home. The home is the unit of the state and of the nation, and certainly that is where the responsibility ought to be. In these days I think the children are trying to get away from discipline, and that, too, is a matter which I certainly appreciated in Dr. Allen's talk. It is one of the things which cannot be escaped, and they are allowed to do probably too much as they wish without being properly guided and directed. Certainly those are things which ought to be undertaken.

I liked, too, the emphasis Dr. Allen placed upon individualism. As we all know, we cannot change the nature of people very much. Women cannot change their husbands and husbands cannot change their wives; we have to accept them as they are, and yet in all our efforts and guidance we hope to preserve the individualism of the child.

Dr. Allen: I appreciate very much these pertinent remarks. I agree with Dr. Tarumianz, that the school does need to be a concern of all of us, as citizens of the community. That brings in the kind of maturity that not only selects adequate teachers but helps them to get that kind of understanding they need for the successful carrying out of their responsibility, and by that I do not mean making physicians out of teachers or psychiatrists out of them, but utilizing the knowledge that we have as physicians to help them to a better performance of their job as teachers.

On the other hand, as to the remark about children escaping discipline today, I am not so sure that that is true. I think youngsters and particularly youth, are confused about it. They are trying to find themselves in relation to discipline. There are undoubtedly instances of over-assertiveness and rebellion. Sometimes, however, it springs out of their need to assert themselves when they have not very much confidence, when they are not very sure of themselves, but it has been my experience with seeing a good many youth, how much they are really seeking discipline, the kind of discipline that is positive, that allows them an opportunity for self-expression, but, however, does not allow them just that sense of freedom.

Only the other day a boy was telling me of his experiences with some kids. He was brought up in a very restricted atmosphere and suddenly went away for a summer's vacation, where, suddenly he was freed from discipline, freed from restraint, rather, and where they went drunk on it. I do not mean alcoholically drunk—I mean it just went to their heads. But out of that they learned a new conception of freedom; that freedom just is not the absence of restraint, but that real freedom—and this came from a sixteen-year-old boy, and it was very interesting—that freedom was really the capacity to use restraint, to use those restrictions and definitions that society sets up, and to know that the only real peace and freedom comes when it is in relation to those requirements and responsibilities with which they have to live.

I think there is a great deal in youth today that wants and is seeking that. We sometimes misunderstand it and get misled by some of the exaggerations that we see in youth, but taking youth as a whole, I do not think they are trying to escape discipline, but more than that, they are ready and anxious to find their relation to those forces in society that are ordinarily described as disciplinary.

DR. BEATTY HONORED

We are pleased to announce that at the Annual Meeting of the American College of Chest Physicians held in San Francisco June 27-30, 1946, Dr. Gerald Beatty, Wilmington, was elected Governor of the College for the State of Delaware.

PULMONARY INFARCTION*

Case Report with Post-mortem Findings

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By definition pulmonary infarction is a pyramidal mass of airless lung tissue infiltrated with blood cells, caused by an embolus or thrombus of the pulmonary artery. There may be, however, embolism without infarction, as in the left lung of this case, and infarction without embolism.

If a large embolus occludes the pulmonary artery the patient may die of shock in a few minutes, leaving no time for an area of infarction to develop. Secondly, an infarcted area may be produced by thrombosis of a single isolated pulmonary vein. The case presented is that of a third pathological process—embolism with infarction. The occlusion of the pulmonary artery in a healthy lung is not necessarily followed by infarction since the lungs have a double blood supply with abundant anastomoses. Infarction develops only if the circulation is impaired as in chronic venous congestion. Castleman[1] states that it has been fairly well established that bland (uninfected) pulmonary infarction does not occur in normal lung, the usual prerequisite being pulmonary congestion. His particular case illustrates that infarction may develop in a pre-existing focus of atelectasis—a condition in which both ventilation and circulation are impaired—but he does not suggest that atelectasis plays a role in the development of the usual infarct.

Case History

A. T., case number 32298, age 53, married, negro male was first seen in this hospital on October 21, 1945, with a chief complaint of severe shortness of breath. His past history and family history were non-contributory. The patient had been having acute attacks of dyspnea for the past three weeks and had been treated by his own physician. The dyspnea was more marked on exertion. The patient had no knowledge of any ankle edema. Physical examination at this time revealed patient in no acute distress. The lungs revealed no abnormalities to percussion and auscultation.

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* From the Departments of Medicine and Pathology, Memorial Hospital.

the myocardial tone was good, but there were occasional premature ventricular contractions and an enlargement to the left. There was questionable ankle edema present. His blood pressure was 110/94 mm. mercury.

Laboratory data on admission and while in the hospital: hemoglobin, 15 gm. or 89.4%; erythrocytes, 4,460,000; leucocytes, 7,200; color index, 1; mature neutrophiles, 70%; young neutrophiles, 5%; lymphocytes, 25%; urinanalysis, essentially negative except for a slight trace of albumin: Kline, negative; blood urea, 12 mgm. %.

Roentgenogram of chest—showed moderate passive congestion bilaterally and moderate left ventricular enlargement.

Electrocardiogram—showed chronic myocardial degenerative heart disease with questionable evidence of associated coronary disase.

While in the hospital he was treated with aminophyllin, bed rest, limitation of fluid intake and a restricted salt diet. After eight days of the above therapy he was discharged on a regime of restricted activity. Diagnosis on discharge was arteriosclerotic heart disease with myocardial fibrosis.

His next hospital admission was June 18, 1946. At this time he presented clinical findings similar to those observed at the time of his previous admission. On further questioning the patient admitted having received antiluetic treatment ten years previously. Physical examination showed a well nourished male negro, mildly dyspneic and orthopneic. The lungs revealed no abnormalities to percussion and auscultation, the heart was enlarged to the left and the sounds were of good quality. A systolic murmur was audible at the apex associated with a gallop rhythm and an occasional premature ventricular contraction. The abdomen was slightly distended and a fluid wave was observed. The ankles were slightly edematous. The blood pressure was 95/80 mm. mercury.

Laboratory data: complete blood count, essentially normal; urinanalysis, 30-40 WBC per HPF (voided specimen); Kline, 2+; Wassermann, negative; blood urea, 20 mgm %; blood chlorides, 434 mgm %; CO_2 combining power, 46 vols. %.

Roentgenogram of chest—revealed an increase of 2.5 centimeters in total transverse diameter of the heart in comparison with the film taken in 1945. (Fig. 1.)

Electrocardiogram—when compared with ECG of 1945 the changes were indicative of further myocardial damage.

On this admission the patient was digital-

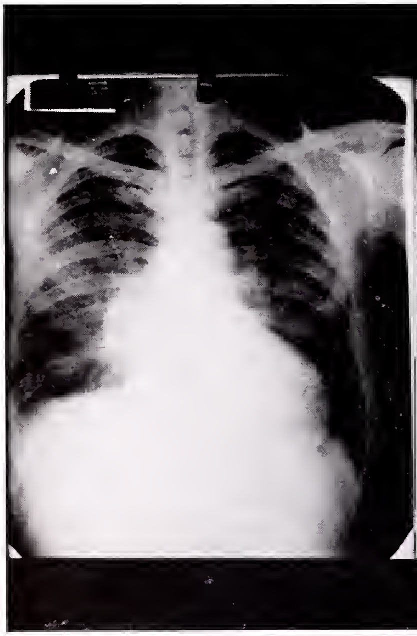

Fig. 1: Area of pneumonitis in the upper portion of right lower lobe, posterior. Film taken 6-24-46.

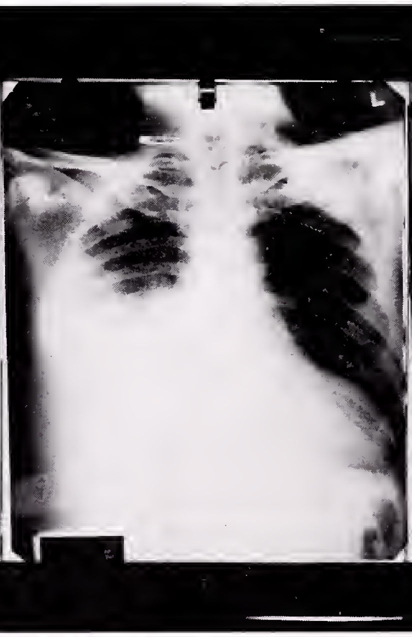

Fig. 2: Dense opacity in right lower and middle lobes, partly due to pulmonary infarction and part due to pleural effusion. Film taken 7-31-46.

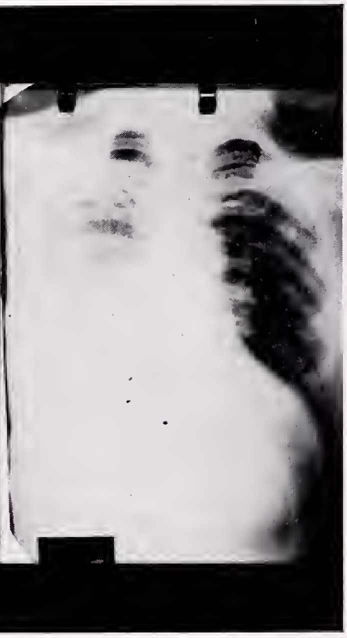

Fig. 3: Film taken 8-2-46 after removal of 1000 cc. of bloody fluid from right chest. Further extension of opacity.

ized with digitalis leaf. He was also given ammonium chloride, mercurial diuretics, and general supportive treatment. After eight hospital days he was discharged improved on a maintenance dose of digitalis. The diagnosis on discharge was the same as in 1945.

The patient's last admission was on July 20, 1946. At this time he complained of shortness of breath, swelling of the ankles and also of the abdomen. Each of his symptoms were more marked than on the previous admissions. The physical findings revealed no striking change from those recorded heretofore.

Laboratory data: complete blood count, essentially normal; urinanalysis, slight trace of albumin and 8-10 WBC per HPF; blood urea, 25 mgm %.

The treatment was similar to that given in June of 1946. During the first eight hospital days of this admission he responded well to therapy but subsequently complained of sharp, intermittent right epigastric pain associated with cough and moderate hemoptysis. Examination of the chest showed no abnormal signs. However, two days later there were signs of a right pleural effusion. Roentgenogram at this time (Fig. 2) showed a dense opacity in the region of the right lower and middle lobes, part of which was interpreted as pleural fluid. A 1000 cc. of bloody fluid was removed from the right chest cavity. The specific gravity was 1.028. Microscopically this fluid revealed many red cells but no tumor cells. At the time of the thoracentesis the patient was restless, markedly dyspneic and moribund. The heart rate was 140 and markedly irregular. Despite general supportive treatment, cardio-vascular stimulants and oxygen therapy the patient expired eight hours after thoracentesis.

Post-Mortem Examination—pertinent findings:

Gross

General: Right hemo-hydrothorax; moderate ascites; bilateral pulmonary arterial emboli.

Heart: Myocardial hypertrophy and degeneration; remote partially healed myocardial infarction at the apex of the left ventricle with overlying mural thrombosis; advanced calcific coronary arteriosclerosis; moderate aortic valvular arteriosclerosis.

Lungs: Complete infarction of the right middle lobe; congestion and edema of both lower lobes; partial atelectasis of the right lower lobe.

Peripheral Vessels: No evidence of intraluminal thrombi in the inferior vena cava, the iliac and femoral veins and arteries.

Microscopic

Myocardial hypertrophy and degeneration; remote partially healed myocardial infarction; advanced calcific coronary arteriosclerosis.

Congestion and edema; partial atelectasis; complete infarction of the right middle lobe.

The remainder of the organs and systems were apparently normal except for chronic passive congestion of the spleen, liver and kidneys. The kidneys showed also a benign nephrosclerosis grossly and microscopically.

Cause of death: Arteriosclerotic heart disease with remote partially healed infarction of the left ventricle; bilateral pulmonary emboli with complete infarction of the right middle lobe.

Discussion

Pulmonary emboli are more frequent than suspected and may occur in many cases in which the primary site of phlebo-thrombosis is not evident clinically or demonstrable after careful post-mortem search of peripheral vessels. Emboli may also occur spontaneously, may be relatively asymptomatic and do not necessarily result in sudden death. They may also occur in non-surgical cases. This case demonstrates asymptomatic bilateral pulmonary emboli with infarction of the right middle lobe and no infarction in the left lung.

Post-mortem findings exhibited a mural thrombus in the left ventricle of the heart. The source of the emboli could have been this mural thrombus. However, there was no patent foramen ovale in the heart to permit an embolus to invade the pulmonary circulation.

Lastly, chronic congestive heart failure not only facilitates the formation of phlebothrombi but also aids the associated formation of pulmonary infarction. Phlebo-thrombosis may be silent and unassociated with phlebitis.

Summary

A case of arteriosclerotic heart disease with myocardial fibrosis is presented for its interesting clinical course, roentgenograms and post-mortem findings. Aside from the diagnosis above the patient presented bilateral pulmonary emboli with a right middle lobe pulmonary infarction. The cause and source of the emboli were not found either clinically or by careful post-mortem examination of the peripheral vessels. The post-mortem findings presented two distinct pathological entities: (1) embolism without infarction in the left lung; and (2) embolism with infarction in the right lung. Lung infarction may occur in patients suffering from congestive heart failure without clinical signs of either emboli or thrombi.

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CONGENITAL ATRESIA OF THE INTESTINAL TRACT*

Report of Two Cases

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Intrinsic intestinal obstruction in the newborn is seen so infrequently that the report of such cases coming under observation is warranted from even a purely academic standpoint. However, with modern methods of surgical management more hope may be had for successful treatment if such cases are religiously reported and errors in diagnosis and management are freely admitted, so that other surgeons may benefit from them. Though the tendency exists to view a death in the neonatal period with more complacency than one occuring in adulthood, this is not defensible from a moral or medical viewpoint despite the greater hazards of infant surgery. Surely, the greater the challenge, the greater the triumph, and the salvage of an infant's life adds more years to the post-operative life-span of the patient than a cure achieved in an adult.

In this paper are presented two cases of intestinal obstruction of intrinsic origin in the newborn, one diagnosed at autopsy and the other diagnosed pre-operatively. Both cases had a fatal outcome. Both cases of obstruction were due to congenital atresia of the small intestine.

Most of the following statements on embryology, pathology, symptomatology, etc. of congenital atresia of the small intestine are abstracted from Ladd and Gross' text "Abdominal Surgery In Infancy and Childhood." The reader is strongly urged to refer to this text for a masterful presentation of this condition and the two diseases from which it must be differentiated: congenital stenosis of the intestine, and malrotation of the intestine, the latter condition often being associated with mid-gut volvulus.

Congenital atresia of the intestine and colon is a rare malformation which Wangensteen reports occurs about once in 20,000 births. The persistent vomiting attending the disease produces severe dehydration, and dilatation may lead to rupture of the bowel. Dehydration and rupture with ensuing peritonitis are the two most important causes of death. Without surgical intervention, death occurs in the first seven days, though a few survive for as long as twelve days. Operation carries a high mortality but successes are being more and more frequently reported in the literature. Early recognition and operation give the best hope of successful outcome.

Embryology. Prior to the fifth week of intra-uterine development the intestinal tract has a lumen lined with epithelum. Soon, however, the epithelium proliferates and the lumen from the pylorus to the ileocecal valve is obliterated, thus forming a solid stage. Later, vacuolization takes place and coalescence of these cystic spaces re-establishes the lumen by the twelfth week. An arrest in the re-establishment of the lumen results in atresia if a complete septum or complete septa persists; stenosis results if the septum is partially perforated.

Pathology. There are two forms of atresia. In one an internal diaphragm or veil is present. In the other, the proximal intestine ends in a blind sac with discontinuity of the bowel. There may be several or many points of atresia converting the bowel into a semblance of a string of sausages. Distal to the point of obstruction, the bowel contains no gas and only a small amount of mucus and cells which have been cast off by the mucosa. The col-

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[*] From the services of Robert O. Y. Warren, M. D., and John C. Pierson, M. D., Memorial Hospital.

lapsed bowel measures about 4-6 mm. Proximally the bowel may be dilated to 3-4 cm. in diameter.

The Meconium. The meconium normally has three constituents: dead cells from the intestinal lining; various secretions from stomach, intestine, liver and pancreas, and swallowed amniotic fluid containing squamous epithelial cells from the vernix caseosa. Normal meconium thus contains many cornified cells; in atresia these are absent, a very significant point in differentiating atresia from obstructions resulting from stenosis or malrotation of the intestine.

Farber's test is most valuable in determining the presence or absence of epithelial cells in the meconium. A specimen of the meconium is taken carefully from the middle of the stool, smeared on a slide, gently washed for one minute with ether to extract the fat, and allowed to dry. It is then stained for one minute with Sterling's gentian violet and washed with running water. Then, it is decolorized with acid alcohol which removes the dye from all of the specimen except the cornified epithelial cells, if these are present. If no cells are present the obstruction is almost certainly due to atresia.

Clinical Findings. Symptoms are almost always present from the first day of life. Vomiting is the outstanding symptom, appearing during or after feedings and becoming progressive and more intense with subsequent feedings. Bile is present in the vomitus if the obstruction is below the papilla of Vater; it is absent if the obstruction is above this level. The vomitus is foul and malodorous if the obstruction is low and consists of curdled milk and yellowish fluid if it is high. It should be stressed that any infant who continues to vomit during the first day or two of life when fed a normal amount of breast milk or a reasonable formula should be studied with x-rays for intestinal obstruction.

The character of the stool may be deceptive. In atresia they are usually smaller, drier and grayish-green rather than the usual tarry meconium. If the appearance is normal, Ferber's test is very valuable in establishing the diagnosis.

Abdominal distention may or may not be present depending on the level of obstruction and the length of time the condition has been untreated. In duodenal atresia, distention is limited to the epigastrium or may be absent if the stomach has been well emptied by vomiting. Distention may be marked and generalized if atresia is present in the jejunum or lower reaches of the intestine. The time of appearance of distention is variable, being occasionally noted by the obstetrician, at other times not appearing for 24-48 hours, depending on how much fluid and air has been swallowed and how effective vomiting has been in emptying the alimentary tract. In duodenal obstruction gastric peristaltic waves may be seen crossing the epigastrium from left to right or they may be limited to the right side of the abdomen. If the obstruction is lower, pattern may be seen anywhere on the abdominal wall.

The presence of fever is frequent and is due to dehydration. If the temperature is over 102-103° F. rupture of the intestine with peritonitis is to be kept in mind.

Roentgenologic Examination. If the patient is carefully observed during the first 24-48 hours, the clinical findings are usually adequate to make the correct diagnosis. X-ray films afford confirmatory evidence and may help to localize the level of the lesion. Films without barium as a contrast medium will give all the important information in most cases. If barium is used, it should be given as a thin mixture and as much of it as possible removed by immediate lavage through a small urethral catheter.

If the atretic area is duodenal in location, the duodenum is ballooned out and may be as large as the stomach; if only 2-3 loops are found to be distended, the jejunum may be suspected as the site of obstruction; if many loops are seen, the ileum or colon is suspect.

Films should be taken in the antero-posterior, lateral, head-up and head-down positions to show the extent of the gas and fluid filled loops. Barium enema studies to demonstrate the potency of the colon only increases the distress of the patient and since the operative exposure would not be altered anyway should not be done pre-operatively. If ileostomy has been previously performed, barium enema study may be valuable in determining the size and continuity of the colon without distressing the patient.

Treatment. The treatment is surgical and should be undertaken in every case no matter how critical the patient's condition, after using all means to restore fluid balance, etc.

Pre-operative measures constitute restitution of fluid and electrolyte loses by parenteral administration of fluids and transfusion if necessary. The baby's extremities should be wrapped and a warm water bottle placed under him to preserve body heat.

Certain technical considerations are worthy of mention. Open drop ether is the preferred anesthetic. A long right rectus splitting or retracting incision is best employed, para-umbilical in location and 3-4 inches in length. Fluid is always present in the peritoneal cavity; if it is malodorous, perforation should be suspected and sought for. The intestines are very tense and must be handled with utmost care to avoid rupture.

If a portion of the proximal bowel appears gangrenous, it should be resected. Aseptic anastomosis is not feasible in these patients, open anastomosis with side-to-side technique appears to be the operation of choice. Ileostomy is contra-indicated since the severe fluid and electrolyte loss is almost invariably fatal in these already depleted individuals. It is desirable to decompress the dilated loop and inflate the collapsed loop with saline or mineral oil before opening the bowel to complete the anastomosis. Multiple areas of atresia should always be sought for.

In duodenal atresia above the papilla of Vater gastrojejunostomy is the procedure of choice; below the papilla, duodenojejunostomy; elsewhere, a side-to-side anastomosis by-passing the obstruction should be done.

Case I

Baby girl, DeL. was born prematurely at 9:00 P. M., July 30, 1946, weighing four pounds fourteen and one-half ounces, showing cyanosis and having a feeble cry at birth. She was placed in a heated crib immediately and within four hours transferred to the incubator. From the onset the infant vomited material described as being like meconium. This vomiting was persistent until death though the patient retained offerings of water occasionally. The infant developed jaundice on the second day of life and one of the hemorrhagic diseases of the newborn was suspected since blood was noted in vomitus. Distention was noted early in the second twenty-four hours, and jaundice and cyanosis persisted throughout the remaining hours of life. Four hours after birth the rectal temperature was 102° F; on August 2, 1946, it reached 101.4° F. CBC revealed 4.88 million RBC; 12 gms Hb (53.8%); 9300 WBC, with 24 mature neutrophiles, 49 young neutrophiles, 3 metamyelocytes, 24 lymphocytes, and 2 nucleated RBC. There was anisocytosis and poikilocytosis and achromia present. Platelet count was 140,000; coagulation time, 5 mins., 27 secs.; bleeding time, 1 min., 4 secs.; prethrombin time, 23 secs. with a control of 47 secs. Despite supportive treatment with fluids, transfusion, vitamin K and oxygen, the patient expired fifty-nine hours after birth.

The significant autopsy findings were as follows: scattered petechiae on the anterior chest wall, mild icterus, prematurity, multiple small abscesses (B. Coli) in the lungs, congestion and miliary abscesses in the kidneys and liver, congestion and focal hemorrhages in the adrenals and congenital atresia of the duodenum. The upper portion of the duodenum was markedly dilated into a large thin-walled sac, the lumen of which was not continuous with the more distal portion of the duodenum. A thin strand of pancreatic tissue separated the two portions of the duodenum and the common bile duct entered into the distal portion. The urachus was patent. No other congenital abnormalities were noted.

Case II

P. S., male, was born at term at the Memorial Hospital on August 13, 1946, at 11:57 P. M., first noted to have lusty cry, good color, and no apparent abnormalities. Birth weight, six pounds one ounce. He vomited first four offerings of sterile water though they were taken well, but retained the following two. Following this, vomiting occurred after each feeding and became more copious and severe, being green in color. One bowel movement was recorded on the nursing notes during the first day of life. Despite the administration of parenteral fluids in the form of Ringer's lactate, the patient did poorly, losing one pound in weight the first day of life. A low grade fever of 100° F. on first post-partum day was noted. Barium meal studies were done on the morning of August 17 and revealed a small intestinal obstruction which was suspected clinically. The consulting surgeon did not feel that immediate operation was advisable due to the extreme oliguria which suggested either profound dehydration or hypoplasia of the kidneys.

Transfusion and fluids were given and there was moderate improvement in the urinary output. CBC on August 17 revealed 3.48 RBC; 15 gms Hb (66%); 14,800 WBC, with 42 P. 54 L. 3M., 1 E. Urine was not obtained for analysis.

Operation was decided upon. About one hour prior to operation the patient passed a meconium stool following rectal examination, which when subjected to Farber's test revealed no cornified epithelial cells. Ninety-three hours after birth operation was performed at 9:20 p. m. on August 17 with the pre-operative diagnosis of congenital atresia of the intestine. The surgeon's operative report is reproduced here verbatim.

"On opening peritoneal cavity a moderate amount of serous fluid was encountered. Small intestines from duodeno-jejunal junction downward were distended until a point was reached about 18 inches from ileo-cecal junction where a marked dilatation was seen and apparent blind end of ileum reached. At this point a strand of undeveloped omentum stretched upward to the greater curvature of the stomach. The latter was not distended. The ascending, transverse, as well as the descending colon were completely collapsed. At the apparent blind end of the ileum (immediately distal) was a fibrous cord continuous with the ileum and reaching for a distance of about seven inches when recognizable small intestine (ileum) was again seen, although this was completely collapsed. The intervening segment was completely obliterated and presented an atresia of the ileum for a length of about five inches.

Technique. Long right rectus incision. Abdomen opened. Small bowel immediately presented in wound and upon delivery of it the site of obstruction (failure of development of the small bowel) was readily seen. After decompression of the dilated segment of ileum by means of a syringe and needle, inversion of this puncture wound by interrupted sutures of #000 silk, ileo-ileostomy was carried out, side to side, and wound then closed using thru and thru sutures of medium silk."

Following operation the patient had five bowel movements which, unfortunately, were not submitted for Farbers' test. Clyses and transfusion were given and a small urethral catheter left in the stomach. The patient appeared in fairly good condition at first but the temperature rose steadily to a peak of 104° F. (rectally) at 10:00 A. M. on August 18. He was pronounced dead three and one-half hours later.

At autopsy the essential findings were a fibrinous exudate over all the abdominal viscera with a moderate amount of clear non-odorus fluid from which no culture was grown. There was no evidence of suture breakdown and the anastomosis appeared patent. There was bilateral lower lobe atalectasis presumed to be due to the elevation of the diaphragm. No other congenital abnormality was found.

Summary

Two cases of congenital atresia of the intestine are reported, one diagnosed at autopsy, and one during the third day of life and operated upon on the fourth day. Both had a fatal outcome. In Case I septicemia and prematurity made the outcome fairly hopeless even if the diagnosis had been made. Case II may have been salvaged if an early diagnosis had been established.

Conclusion

1. Congenital atresia is a rare disease which is uniformly fatal, usually within seven days, if not surgically corrected.

2. Any infant who continues to vomit during the first day or two of life while fed a normal amount of breast milk or a reasonable formula should be studied roentgenologically for intestinal obstruction. Barium studies are rarely indicated and carry the dangers of aspiration pneumonia, increasing the patient's distress and increasing the difficulty of operation.

3. Any newborn with the diagnosis of congenital atresia should be operated upon despite his general condition or prematurity, the incidence of which is higher than in normal births.

4. Side-to-side open anastomosis under ether narcosis is the procedure of choice.

5. The expectancy of normal development in those who survive surgery is excellent.

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SOME LIMITATIONS OF ELECTROCARDIOGRAPHY

A. Henry Clagett, Jr., M. D.
Wilmington, Del.

An electrocardiogram (ECG) is the graphic representation of the difference in electrical potential between two portions of the body caused by the action current of the heart.

The process of *reading* the ECG is a relatively simple one and, while usually performed by a physician, can be mastered by the average technician with a moderate amount of training. By reading the ECG we refer to the measurement of the cardiac rate, time intervals of auriculo-ventricular and interventricular conduction, amplitude of the various complexes, determination of rhythm, and so forth.

The *interpretation* of the ECG on the other hand should be made not only by a physician but by one specially trained in this particular field. It was a criticism of this process that brought forth Willius' excellent article in 1942,[1] a paper that should be read by every internist and general practitioner of medicine.

In the first place there is no machine in existence which will hand forth a ready-made diagnosis. The so-called "electrocardiographer" is a dangerous individual when, as so often is the case, he attempts to make a clinical diagnosis from an ECG, not realizing that the ECG is merly an adjunct to clinical diagnosis. "In order to prevent the deterioration of electrocardiography as a valuable clinical method, its subservience must always be accepted."[1]

How should one interpret an ECG? On one hand there is the "electrocardiographer" who interprets the tracing and makes a diagnosis knowing nothing whatsoever about the patient. At the other extreme is the clinician, who, after making a clinical diagnosis, reads too much into the tracing and improperly ascribes certain "abnormalities" of the ECG to be due to the clinical condition. To combat both of these evils and at the same time to get the greatest amount of aid from the ECG, Katz[2] has suggested the following excellent routine: Knowing nothing about the patient except the age and body habitus, the physician should read the tracing and make a statement as to whether the tracing is normal or abnormal. (Subdivisions such as "probably normal," "borderline," or "probably abnormal" are not only permissible but desirable.) After making this statement, which preserves the highly desired objectivity of the procedure, he then should obtain all pertinent data regarding the patient and attempt to correlate them with the ECG. The physician who conscientiously follows this routine will avoid many unnecessary pitfalls.

What *definite* information can be obtained from the ECG? The cardiac rate, rhythm, and the different degrees of auriculo-ventricular and interventricular block can be determined with certainty from the ECG. The pattern of myocardial infarction is fairly typical and it is in connection with this condition that the ECG is of extreme value. It must be remembered, however, that the diagnosis should not be made from a single ECG without taking the clinical picture into consideration. There are other conditions which produce tracings that stimulate those of infarction and the *change* seen in serial tracings is of extreme importance in the diagnosis as well as the progress of the lesion. Tracings from patients with digitalis effect or intoxication, strain of one or both of the ventricles, pericarditis, and other conditions may be very suggestive of the correct etiology but great caution should be exercised and a *diagnosis* should not be made from the tracing alone.

What are some common fallacies and pitfalls in electrocardiographic interpretation? Willius states, and rightfully so, that it is a great error to call the heart normal because there is a normal ECG in a patient with a history of angina pectoris. It is my opinion that more mistakes are made in the opposite direction, in that the uninitiated "electrocardiographer" is not sufficiently acquainted with the wide range of electrocardiographic normals and tends to call many tracings "abnormal" without sufficient evidence. A few of the more common errors along this line can be seen at a glance in the accompanying table.

ECG Finding	"Diagnosed" As Due To	Actual Significance
Q-3 with inverted T-3	Posterior myocardial infarction	Normal transverse heart
Left axis deviation	Left ventricular hypertrophy	Normal transverse heart Normal in elderly individual
Right axis deviation	Right ventricular hypertrophy	Normal in infants and in persons of asthenic habitus
Premature beats	Myocardial damage	Usually the insignificant! May be abnormal when onset follows myocardial infarction or when their incidence is increased by exercise
Low voltage	Myocardial damage	There are many other causes for low voltage

It is not impossible to obtain faulty tracings by reason of a technical error during the recording. This is especially true in the case of the precordial leads where the technician inadvertently crosses the lead wires and obtains a chest lead with the polarity reversed. I have seen a case where this happened and, on this single ECG, the "electrocardiographer" made a diagnosis of myocardial infarction.

If this brief declaration should stimulate any reader to consult Willius' article, it shall have been worthwhile. I shall close with another quotation from Willius:

> "The electrocardiographer is not content to concern himself only with the interpretation of the graph before him but exerts his talents far beyond the boundaries of the science and records a clinical diagnosis. This license is frequently assumed when the interpreter knows nothing regarding the patient's history or physical findings because he has not conducted an examination. Under such circumstances the expression of a clinical opinion is utterly unwarranted, and when rendered constitutes an absurdity which has regrettably become prevalent and is a destructive influence in clinical electrocardiography.
>
> "I have discussed this objection with certain offenders and their invariable retaliation embodies the excuse that if a clinical opinion is not included the referring physician will not refer any more patients. Such an excuse is not acceptable and clearly indicates the fact that the electrocardiographer has evaded his true mission to his colleagues and to his community. Two alternatives confront him. He must either create an understanding among his medical associates so that they also realize the limitations as well as the advantages of electrocardiography or he must permit them to draw their own inferences from his interpretation of the graph alone. Any compromise in this attitude is not only fallacious but dangerous."

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712 Washington Street

MISCELLANEOUS

Re: Dr. Fishbein

Dr. Morris Fishbein, editor of the Journal of the American Medical Association, is described in the October 19th Saturday Evening Post as "the best-known and least-liked doctor in the United States."

In an article entitled "Medicine's India-Rubber Man," Greer Williams writes that Dr. Fishbein "has been the despair of the best people and the wost—of professors and of quacks. He has been sued by cranks, vilified by patent-medicine makers, damned by senators, deplored by social workers, exposed by muckrakers and repudiated by medical societies. But his reflexes are still good at the age of fifty-seven. Always this small, hunchy man with the bald head, big ears, waving hands and cheerful insolence has bounced back."

Dr. Fishbein, the article goes, "owes his somewhat mixed distinction to a double-edged truism: a sharp tongue dulls friendship, but it also gets attention. Like all success formulas, this one has spells of backfiring. Even so, Fishbein has made it almost a sure thing by saying what most doctors would like to have said and by being the only one of his kind."

When the American Medical Association observes its 100th anniversary in Atlantic City next June, the article states, Dr. Fishbein "as much as any man—can take credit for its growth."

Congress On Medical Education And Licensure

The 43rd annual session on medical education and licensure and related topics will be held at the Palmer House in Chicago, February 10 and 11, 1947, under the auspices of the Council on Medical Education and Hospitals of the American Medical Association and the Federation of State Medical Boards, according to an editorial in the October 12 issue of *The Journal*.

The editorial states:

"The termination of the war and the demobilization of the army have produced problems which in many ways surpass in difficulty

(Continued on Page 240)

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154.*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60.

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+ Editorial +

DELAWARE STATE MEDICAL JOURNAL

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Vol. 18 October, 1946 No. 10

The Annual Session

The 157th Annual Session of the Medical Society of Delaware was held at Dover, on October 8th and 9th, with the President, Dr. Walter C. Deakyne, of Smyrna, presiding. The program as prepared was carried out without any changes. Every essayist was on hand at his appointed time, and the papers presented were of a uniformly high quality and were liberally discussed. The transactions of the House of Delegates were conducted smoothly and efficiently. They will be published in the December issue of The Journal.

The President's address stressed the bringing of medical facts and triumphs, as well as our economic and political problems, to the public in a more concerted and systematic manner than has obtained hitherto. This policy won wide approbation.

The social features comprised two luncheons and a dinner, and were thoroughly enjoyed by all who attended.

The following officers were elected for the year 1947:

President, Dr. W. Edwin Bird, Wilmington.

1st Vice-President, Dr. Howard S. Riggin, Seaford.

2nd Vice-President, Dr. Henry V P Wilson, Dover.

Secretary, Dr. C. Leith Munson, Wilmington.

Treasurer, Dr. W. W. Lattomus, Wilmington.

Councilor, Dr. Ervin L. Stambaugh, Lewes.

The annual meeting of the Woman's Auxiliary was held at Dover on October 9th, the business meeting being conducted by the President, Mrs. Ervin L. Stambaugh, of Lewes. The usual reports of officers and committees were presented and accepted. The feature of the meeting was an address by the President on the highlights of the National Auxiliary Convention in San Francisco last July.

The following officers were elected for the years 1947-48:

President, Mrs. George C. McElfatrick, Wilmington.

Vice-Pres. for New Castle Co., Mrs. John H. Mullin, Wilmington.

Vice-Pres. for Kent County, Mrs. Walter C. Deakyne, Smyrna.

Vice-Pres. for Sussex Co., Mrs. George M. Van Valkenburgh, Georgetown.

Recording Secretary, Mrs. Sylvester W. Rennie, Wilmington.

Corresponding Secretary, Mrs. Andrew M. Gehret, Wilmington.

Treasurer, Mrs. Charles M. Bancroft, Wilmington.

The next meeting of the Society and its Auxiliary will be held at Wilmington in October, 1947.

Penicillin Facts And Rumors

Recent articles in periodicals of wide circulation have created unwarranted fears in the minds of the public concerning the value of penicillin and other new remedies.

Unfortunately, some of the articles are factually incorrect. The creation of doubts and fears in the minds of patients concerning the therapy which they receive may prevent the fullest realization of benefits from treatment.

Physicians should be in a position to give their patients the facts concerning penicillin and to allay any doubts or fears created by these publications. Briefly, the facts concerning the latest developments in penicillin therapy are as follows:

1. Commercial penicillin has consisted of varying mixtures of one or more of the five known fractions, F, G, X, K and dihydro F.

2. Penicillin K is apparently rapidly destroyed or eliminated in the body, and therapeutic levels are not achieved or maintained in the body fluids following ordinary doses.

3. Commercial penicillin now available is predominantly penicillin G, which is known to be effective although some of the penicillin produced for a few months in 1945 may have had relatively less G and more K than previous or subsequent batches.

4. As far as facts are available, penicillins F and X are as active clinically as penicillin G. Further research will be necessary to define their usefulness with preciseness.

5. Since precise methods are not available for the routine determination of the quantities of each fraction in each batch of penicillin, the National Research Council has recommended increased dosage of penicillin as a safety precaution, particularly in the treatment of syphilis, in which the end result of therapy cannot be evaluated for a long time.

6. Although bacteria have been made resistant to penicillin in the test tube, development of clinical resistance has not become a problem. Such an eventuality may be prevented, in part, by giving adequate and not minimum doses of penicillin.

7. All penicillin and penicillin pharmaceuticals currently on the market have been examined and certified as to safety and efficacy by the United States Food and Drug Administration.

8. It is possible that natural or synthetic variations of the penicillin molecule will result in the development of a clinically better penicillin. None better than penicillin G is now available.

While it is realized that the rapid developments now being made in therapeutics make it increasingly difficult for busy physicians to read and evaluate the many scientific articles appearing in hundreds of periodicals, the physician can keep himself informed of the more important developments through a study of the Reports of the Council on Pharmacy and Chemistry. Furthermore, the Council office and its personnel are always ready to answer inquiries and furnish information on drugs and therapeutic agents. Physicians, by using this service, can allay the fears of their patients who have come to doubt the efficacy of penicillin even when properly used.

Congress On Medical Education And Licensure

(Continued from Page 237)

those created during wartime. The extreme overcrowding of undergraduate universities and colleges, the reconversion of the medical school programs, the unprecedented demand for residency training and the affiliation of medical schools with veterans' hospitals are a few of the important issues to be met. This 43rd annual congress promises to be of unusual significance. The congress provides an opportunity for special meetings of several national groups concerned with medical education, hospitals and licensure. These include the Executive Council of the Association of American Medical Colleges, the Advisory Board for Medical Specialties, the National Board of Medical Examiners and several others. Reservations at the Palmer House should be made at once. It is important that the request for reservations be addressed to Mr. Frank Anton and that mention be made of the Annual Congress on Medical Education and Licensure."

New Drug For Malaria

A new antimalarial drug, pentaquine (SN 13,276—a complex chemical with the appearance of yellow needles), has been found effective in suppressing infections due to the commonest and mildest form of the disease known as Plasmodium vivax, according to the October 12 issue of *The Journal of the American Medical Association.*

R. F. Loeb, M. D., New York, chairman of the Board for Coordination of Malarial Studies, in cooperation with other members of the board, investigated the action of the drug in civilian establishments under the sponsorship of the Committee on Medical Research of the Office of Scientific Research and Development and in various Army installations.

Some of the pertinent conclusions drawn from these studies are:

Pentaquine, studied in mice, rats, dogs, monkeys and human beings, is rapidly and completely absorbed from the gastrointestinal tract.

It has an undesirable, but, at present, ill defined effect on the heart and circulation when administered in large doses.

The poisonous quality of pentaquine is too great to warrant its use in preventive treatment or prolonged suppression of malaria

The action of this drug was studied on 171 white volunteers. The investigators concluded that a daily dose of 60 milligrams of pentaquine and two grams of quinine administered concurrently in divided doses every four hours for 14 days is "sufficient to produce radical cure of severe infections due to Plasmodium vivax." However, they caution that the daily dose of 60 milligrams should not be exceeded. "Pentaquine should be administered only under close medical supervision, preferably during hospitalization," they add.

In conclusion the article states that the poisonous effect of the drug in Negroes and persons of mixed racial extraction and the safe treatment dosage for children are at present undetermined.

BOOK REVIEWS

Practical Malariology. By Paul F. Russell, M. D., M. P. H., Luther S. West, Ph. D., and Reginald D. Manwell, Sc. D. Pp. 684, with 283 illustrations, 8 in color. Price, $8.00. Philadelphia: W. B. Saunders Company, 1946.

mended, without qualification, to all persons who have any concern with malaria; whether their interest is literary, medical, biological, engineering, or merely that of an earnest dilettante.

As its title indicates, this manual, a National Research Council publication, is based upon the practical knowledge of the authors gained through experience. They have well achieved their aim of giving clinical, laboratory and field information, about malaria, capable of being put to use in daily practice. During actual hostilities of World War II certain developments were restricted but now that censorship has been lifted it has been possible for them to discuss all important advances, thus integrating the new with the old. The result is this well balanced account of a disease which has put down nations from their high place in history and which is a most serious menace to civilian populations even now.

A paragraph of the preface is well worth quoting because it identifies so exactly the reasons why malaria is still be reckoned with:

> "Scarcity of suitable malaria control organizations is probably the most serious social handicap to malaria prophylaxis throughout the world today. Economic barriers have lowered or altogether removed by spray-killing. Rural malaria control in many areas can now be one of the least expensive of public health measures. But until there is wide acceptance of the outstanding lesson in regard to the necessity for organization, so clearly demonstrated in World War II, malaria will remain a paramount disease."

Following a historical introduction which traces malaria from the earliest times to the use of DDT the text is divided into six sections: The Parasite; the Mosquito; the Man; the Community; Prophylaxis and Control; Therapeutic Malaria.

Each of these sections is subdivided in so masterly a fashion the carefully prepared index of twenty-three pages might almost have been omitted without too great interference with the use of the book as a reference text. To illustrate the systematic content of the sections, let us put down the headings of Section III—The Man. They are: Pathology; Clinical Aspects; Treatment of Malaria; Immunity; Latency and Relapse; Blackwater Fever. And then to illustrate the systematic manner in which each topic is analyzed, let us follow Blackwater Fever: first a brief, complete, description, then, History, Epidemiology, factors, mechanism of hemoglobinuria—Morbid Anatomy, Clinical Pathology—blood, urine — Symptoms, Differential Diagnosis, Treatment, Prognosis, Prophylaxis, References.

It is not possible to pay adequate tribute to so magnificent a production in the limits of an admissible review. One striking point is the apparent ease with which reference is constantly made to the historic development of a name or a method or a theory. These are details which result only from years of literary research combined with an intense concern for painstaking accuracy and thoroughness in the library as well as in the clinic and in the field.

At the end is an appendix of Keys to World Anophelines, taxonomic details being illustrated and explained in the text. The keys are arranged according to geographic areas and cover the descriptions of adult females and of fourth instar larvae. There is also a key to the eggs of the *maculipennis* complex.

In the foreword, Raymond B. Fosdick, President of the Rockefeller Foundation, says of malaria that "it is a stubborn disease, slow to kill, quick to incapacitate, and hard to cure." Here also is revealed the fine qualifications of the authors of this volume; the senior author had been doing malaria control work as a field director of the Rockefeller Foundation for nearly twenty years when he was drafted to head the malaria division of the Office of the Surgeon-General of the Army.

The dedication, recording so dramatically, in two final words, an achievement of the war effort, transmutes the book into a monument upon which these words are graven: "Dedicated to the personnel of the special field Malaria Control Organizations of the Armed Forces of the United States in World War II, through whose self-sacrificing and intelligent efforts the military hazards of malaria, so serious in 1942 and 1943, were subdued."

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.

Required by the Act of Congress of August 24, 1912, and March 3, 1933, of The Delaware State Medical Journal, Published monthly at Wilmington, Delaware, for October 1st, 1946.

STATE OF DELAWARE
COUNTY OF NEW CASTLE } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. A. Tarumianz, M. D., who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Delaware State Medical Journal and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation) etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of— Post Office Address

Publisher—The Star Publishing Co., 309 Shipley St., Wilmington, Del.

Editor—W. Edwin Bird, M. D., 822 North American Bldg., Wilm., Del.

Assoc. Editor—C. Leith Munson, M. D., Medical Arts Bldg., Wilm., Del.

Managing Editor—M. A. Tarumianz, M. D., Farnhurst, Del.

2. That the owner is: (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

The Medical Society of Delaware

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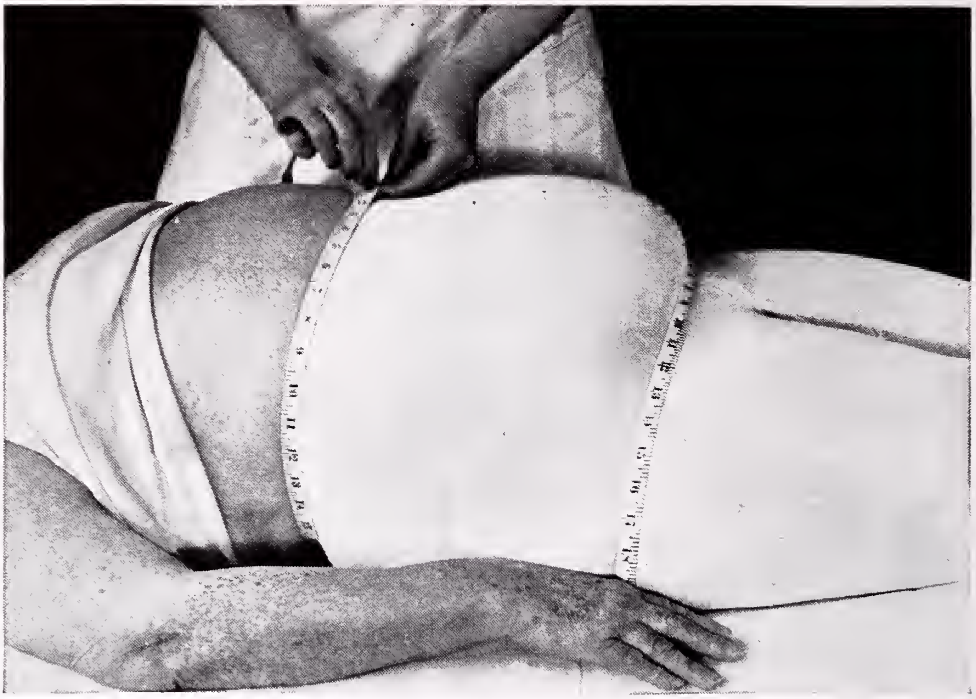

OBESE PATIENT: When standing erect, her anterior abdominal wall sagged down upon her thighs.

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>
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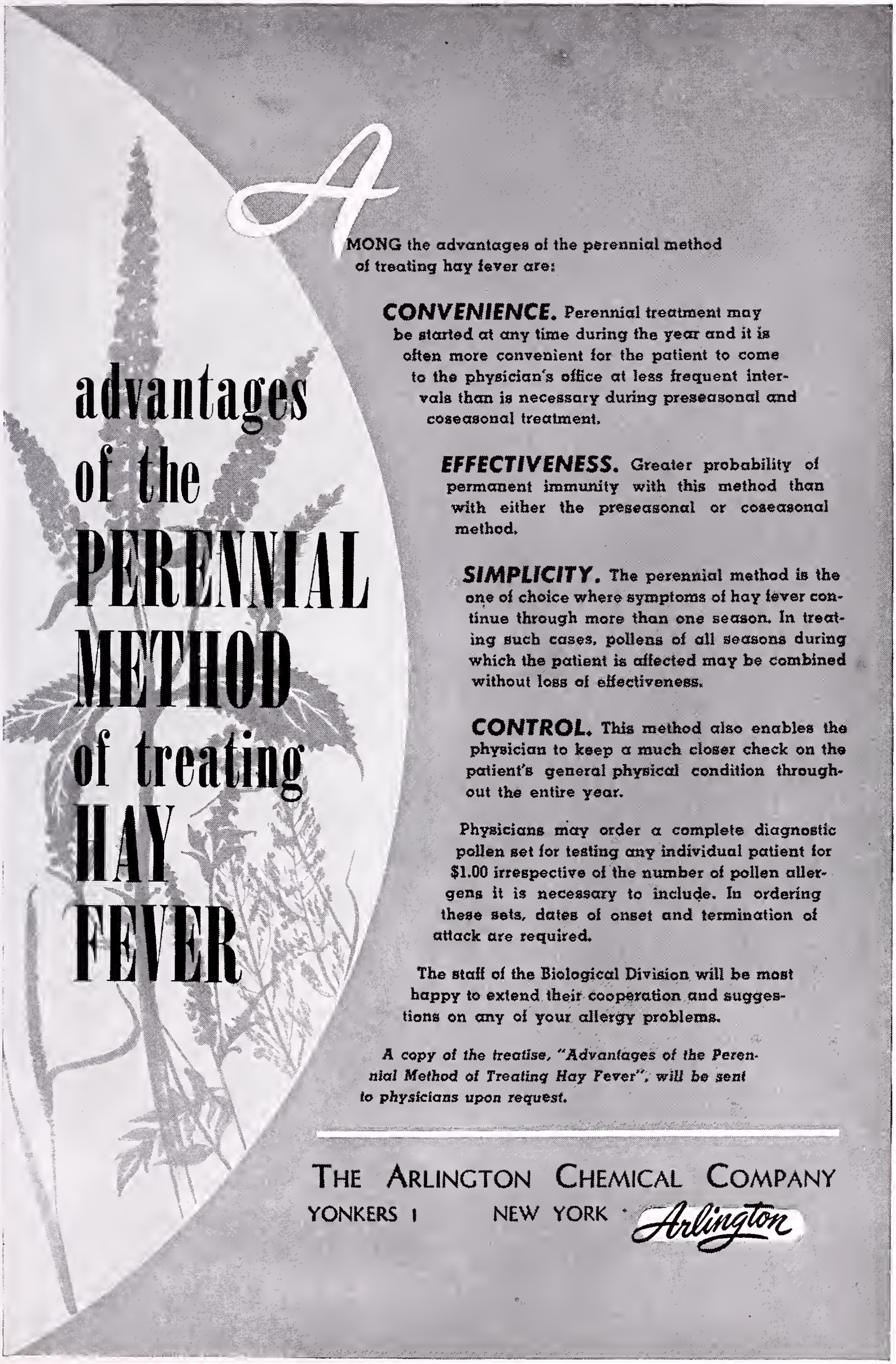

advantages of the PERENNIAL METHOD of treating HAY FEVER

AMONG the advantages of the perennial method of treating hay fever are:

CONVENIENCE. Perennial treatment may be started at any time during the year and it is often more convenient for the patient to come to the physician's office at less frequent intervals than is necessary during preseasonal and coseasonal treatment.

EFFECTIVENESS. Greater probability of permanent immunity with this method than with either the preseasonal or coseasonal method.

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The Delaware State Society For Mental Hygiene, Inc.

The Delaware State Society for Mental Hygiene, Inc., located at 1308 Delaware Avenue, Wilmington 19, Delaware, is engaged in the following activities:

(1) It carries on a continuous educational campaign throughout the State to interpret to its citizens the accomplishments and needs of the Delaware State Hospital, the Mental Hygiene Clinics, the Delaware Colony, and other Delaware institutions and agencies dealing with mental hygiene and emotional problems.

(2) By talks, discussion programs, newspaper and radio publicity, the Society strives to remove the stigma, in the minds of many people, connected with the problem of mental disease in their families, and urges early diagnosis and treatment.

(3) Organizes mental hygiene programs for educational, nursing, social work, Red Cross, religious groups, women's clubs and service clubs in Delaware.

(4) Is engaged in a five-year research and demonstration program to see if transferable techniques for use by teachers with school children can be discovered which will assist in raising the emotional maturity of the average graduate of the schools in this State.

(5) Conducts demonstration Human Relations classes in schools throughout the State to give teachers and school administrators practical experience in mental hygiene problems in the classroom, and at the same time to give children in these classes a better understanding of the important part emotions play in their lives.

(6) Is engaged in a research program dealing with extremely shy children to see what can be done in helping these shy children have more social contact with their classmates.

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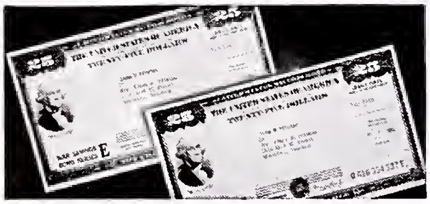
America finds a new, easy way to save

Out of the war has come one blessing—a lesson in thrift for millions of those who never before had learned to save.

Enrolled under the Payroll Savings Plan in thousands of factories, offices, and stores, over 27 million American wage earners were purchasing "E" Bonds alone at the rate of about 6 billion dollars worth a year by the time V-J Day arrived.

With War Bond Savings automatically deducted from their wages every week, thrift was "painless" to these wage earners. At the end of the war, many who never before had bank accounts could scarcely believe the savings they held.

The moral was plain to most. Here was a new, easy way to save; one as well suited to the future as to the past. Result: Today, millions of Americans are continuing to buy, through their Payroll Savings Plan, not War Bonds, but their peacetime equivalent—*U. S. Savings Bonds.*



From war to peace! War Bonds are now known as U. S. Savings Bonds, bring the same high return—$25 for every $18.75 at maturity.

Out of pay—into nest eggs! A wage earner can choose his own figure, have it deducted regularly from earnings under Payroll Savings Plan.

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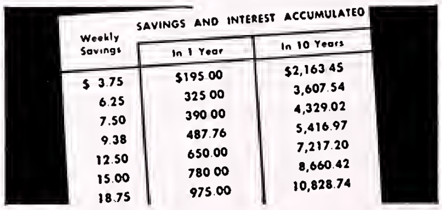

Weekly Savings	SAVINGS AND INTEREST ACCUMULATED In 1 Year	In 10 Years
$ 3.75	$195.00	$2,163.45
6.25	325.00	3,607.54
7.50	390.00	4,329.02
9.38	487.76	5,416.97
12.50	650.00	7,217.20
15.00	780.00	8,660.42
18.75	975.00	10,828.74

Savings chart. Plan above shows how even modest weekly savings can grow into big figures. Moral: Join your Payroll Savings Plan next payday.

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Frazer* states that the ordinary mode of effecting the cure is to split a young ash sapling longitudinally for a few feet and pass the child, naked, either three times or three times three through the fissure at sunrise. In the West of England, it is said the passage must be "against the sun." As soon as the ceremony is performed, the tree is bound tightly up and the fissure plastered over with mud or clay. The belief is that just as the cleft in the tree will be healed, so the child's body will be healed, but that if the rift in the tree remains open, the deformity in the child will remain, too, and if the tree were to die, the death of the child would surely follow.

---

*Frazer, J. G.: The Golden Bough, vol. 1, New York, Macmillan & Co., 1923

It is ironical that the practice of attempting to cure rickets by holding the child in the cleft of an ash tree was associated with the rising of the sun, the light of which we now know is in itself one of Nature's specifics.

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NOVEMBER, 1946

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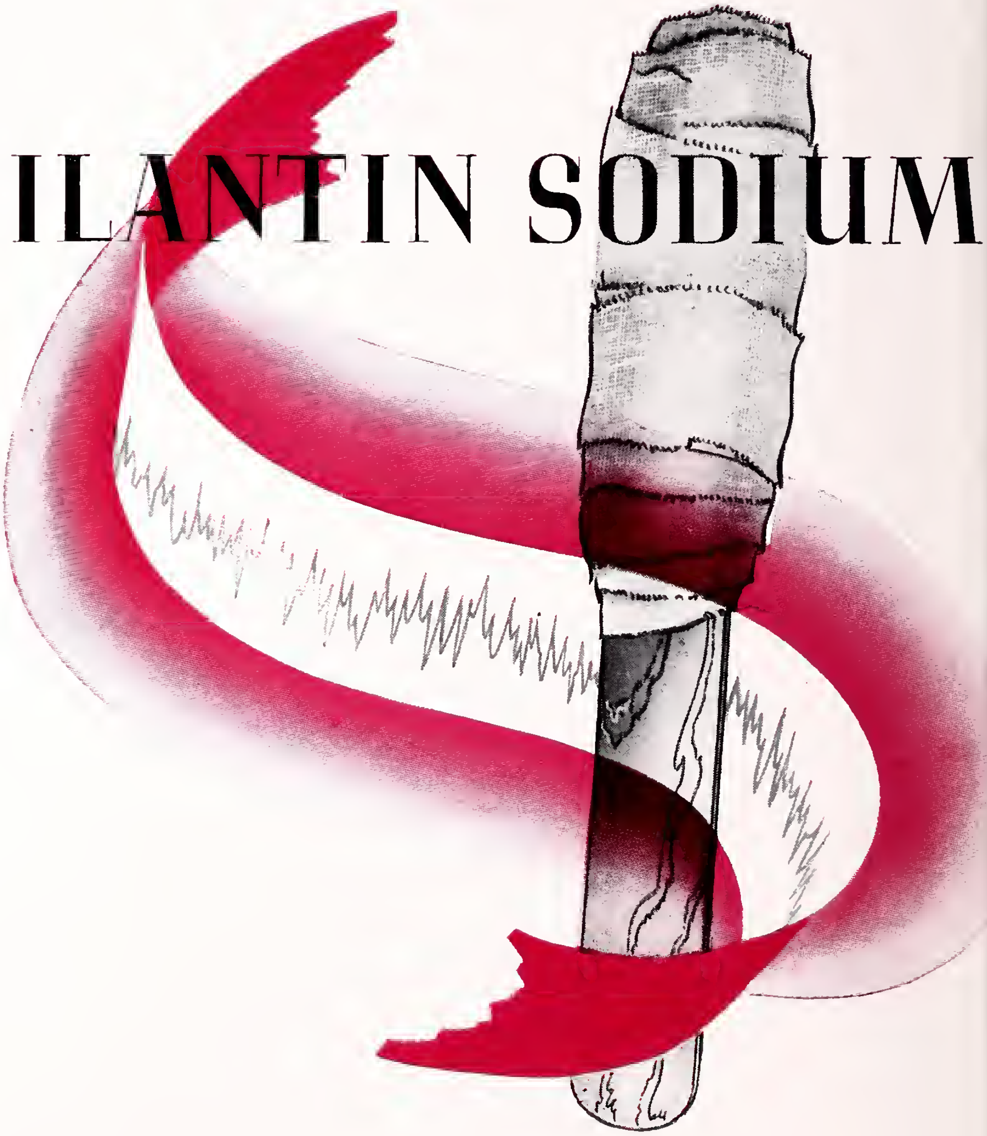

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Scarano, J. A., and Coppolino, J. F.: Arch. Pediat. 54:97

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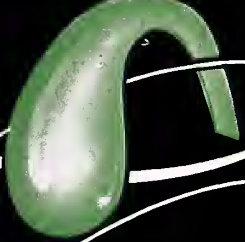

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1. Dannenberg, M.: Am. J. Roentgenol. 51:328, 1944

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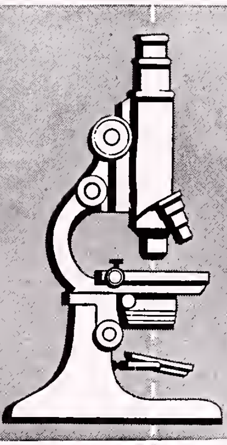

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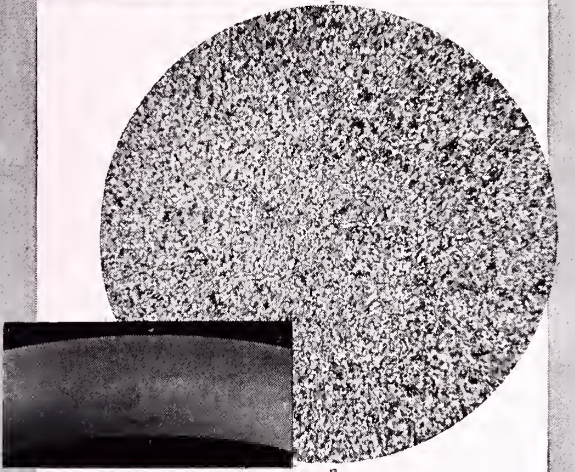

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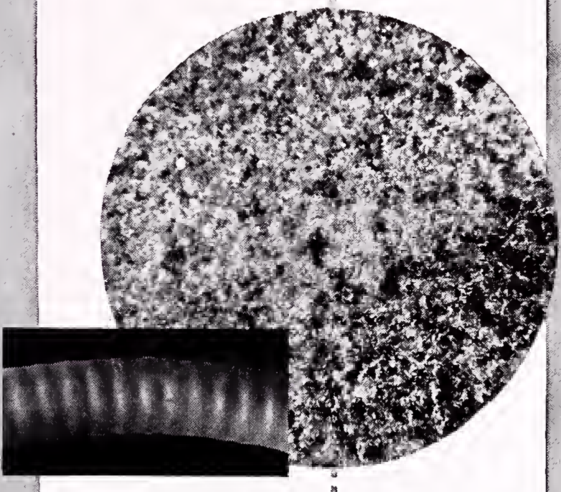

No. 2 Unretouched photomicrograph of the dome (enlarged 10 diameters) and the rim (inset) of a conventional-type diaphragm.

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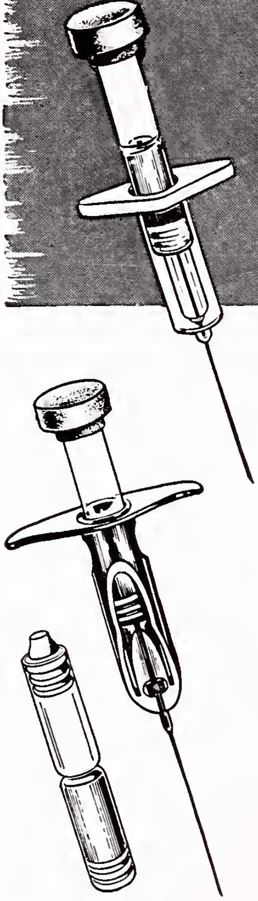

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[1] *Montgomery, J. B.: M. Clin. North America* ***29****:205 (Nov.) 1945.*

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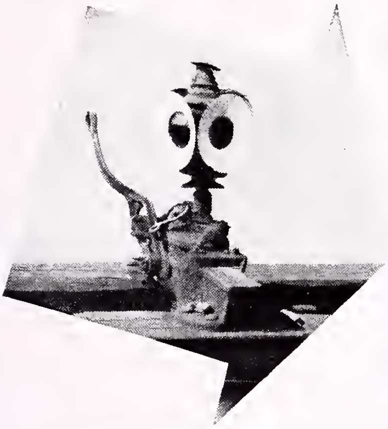

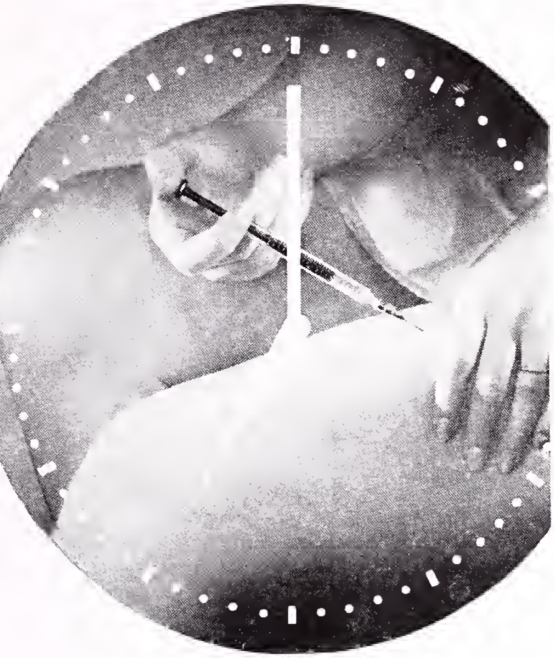

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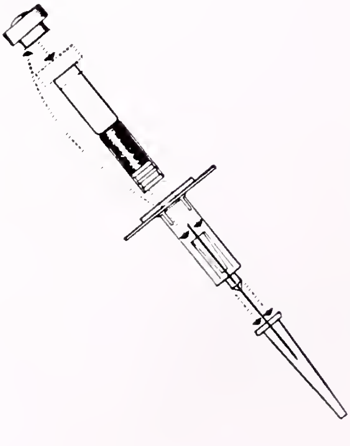

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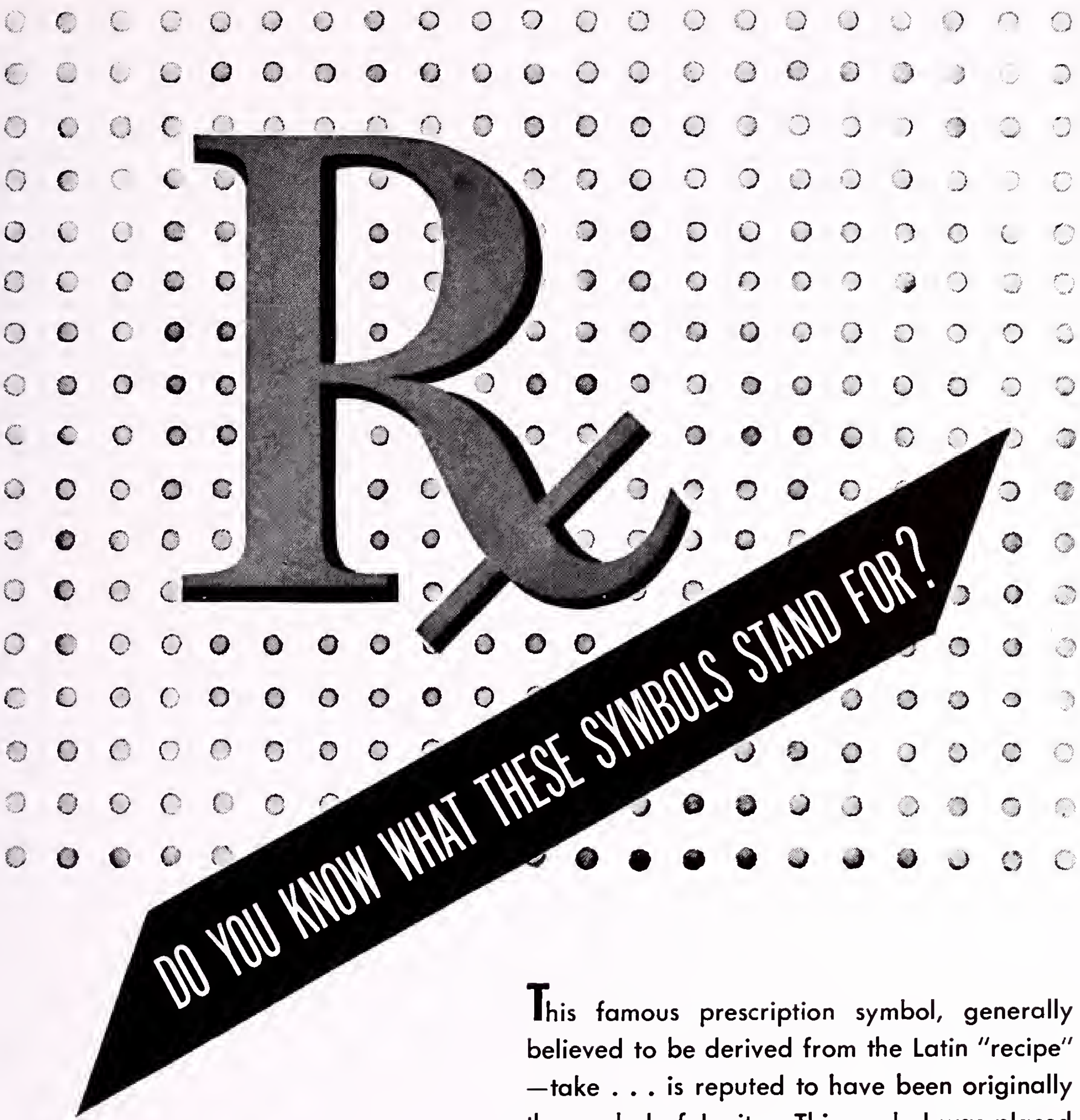
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Although sulfonamides are generally effective, problems sometimes arise in their administration. In the patient with cardiac or renal disease, it may be difficult to maintain proper fluid balance. This imbalance may lead to urinary tract complications. Others may experience untoward toxic effects or lack of response to the drug. In these cases, Penicillin, Lilly, is particularly valuable. While the intramuscular injection of 10 to 15 thousand units every three hours throughout the night and day might be helpful, doses of 20 thousand or more units at the same intervals are preferable. Penicillin, Lilly, is available in 20-cc. ampoules containing 100,000, 200,000, or 500,000 units.

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Cause for rejoicing

BEING subject to the human frailties common to all, the physician must have an occasional day of rest. No occasion could be more fitting than Thanksgiving Day, particularly this year when there is real cause for rejoicing. The guns have now been silent for more than a year. Order has gradually been restored to nations long in chaos. While armies of occupation still must be maintained, much of the danger is over and trips home are more frequent. It is the sincere wish of Eli Lilly and Company that patients may be as considerate this Thanksgiving as their conditions will allow, and that physicians throughout the land may enjoy the day with family and friends.

A picture of The Good Samaritan provided the inspiration that eventually led to the founding of Eli Lilly and Company

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PYELITIS: EARLY SYMPTOMS, DIAGNOSIS and TREATMENT*

JOSEPH C. BIRDSALL, M. D.,**
Philadelphia, Pa.

The majority of renal infections in children, and many in adults, particularly in association with pregnancy, are commonly designated by the term pyelitis, which the famous French physician, Rayer, originated in 1837 to specify infection of the kidney pelvis in contradistinction to infection solely of the parenchyma, or a combination of infection of the pelvis and parenchyma. In his excellent monograph at that early period Rayer observed and emphasized that infection of the renal pelvis rapidly involved the renal parenchyma and conversely infection quickly involved the pelvis from the renal parenchyma. Since this early description there has been voluminous literature and much controversy as to the actual clinico pathological picture of renal infections in children, and only in the past decade has Helmholz and others shown that in the so-called pyelitis of children, the infection is usually more extensive with parenchymal involvement and the true picture is that of a diffuse interstitial suppurative nephritis.

The etiological factors and modus operandi concerned in renal bacterial invasion must take into consideration the various accessible pathways or routes available to the attacking pathogenic organisms, but of far greater importance for successful invasion are the accessory factors which increase the vulnerability of the kidney, lessen its resistance to repeated attacks, and if obstructive in character, the gradual production of hydronephrotic and pyelonephritic atrophy.

Pathogenic organisms may in rare instances reach the kidneys by continuity as in the extension of an empyemic process beneath the crus of the diaphragm and invade the perinephric space. The hematogenous, lymphogenous, lymphohematogenous and urogenous or urogenitogenous routes are the more usual pathways involved and clinically indicated as the invading channels traveled by the specific organism.

Ascending invasion of the kidneys may be vesico-ureteral, pyelo-ureteral, or pyelo-parenchymal, and is usually closely associated with one of the many types of urinary tract obstruction or neuro-muscular dysfunction. In vesico-ureteral ascension it has been definitely established, clinically and experimentally, that the invading organisms gain the renal pelvis by a reflux, with or without disease of the uretero-vesical orifice. It is, however, more frequently found in long standing cases of vesical neck or urethral obstruction and when the uretero-vesical orifice has lost its tone. Lymphogenous, coccal or bacillary renal invasion has been experimentally shown to have taken place, but clinically it is somewhat difficult to establish a direct pathway and a characteristic renal type of lesion. The lymphatic ducts convey organisms from various infected lymphatic nodes to the hematogenous route.

The ascent of bacteria from the renal pelvis to the renal tubules and parenchyma producing ascending pyelonephritis is possible by means of a pyelovenous or pyelotubular, pyelo-tubulo-venous or pyelo-tubulo-lymphatic backflow and by extension from any one of these channels to the interstitial or parenchymal substance.

Bacteremia takes place through the mechanism of pyelovenous backflow.

In hematogenous invasion of the kidneys the origin of the bacteremia may be from a general source as infectious fevers, or from a focal or common localized source as furuncles, carbuncles, infected teeth, tonsils, sinuses, gall bladder, prostate gland or miscellaneous infection anywhere in the intestinal tract or in the male or female genital organs. The three most frequent sources of bacteremias of renal significance arise from (a) coccal skin infections with the formation of the renal cortical abscess and the renal carbuncle with subsequent perinephritic abscess development, or if there is a massive bacterial attack the whole organ becomes studded with small abscesses producing the clinical picture of acute hematogenous suppurative nephritis, (b) intestinal tract lesions in which case the bacteremia is of the colon bacillus family or (c) the male urethra and prostate gland as the source of coccal or bacillus coli bacteremias.

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* Read before the Medical Society of Delaware, Wilmington, October 9, 1945.

** Professor of Urology, Graduate School, University of Pennsylvania.

Although renal infections are definitely produced by invasion of pathogenic organisms there are several predisposing and accessory factors which are directly responsible for bacteria overcoming the last barrier and actually becoming entrenched in the kidney itself. Sex, age, trauma, toxemia, renal mobility, neuro-muscular disease and congenital malformations are all important causative factors in the production of renal vulnerability but mechanical lesions, both congenital and acquired with its concomitant urinary stasis, are the most important and responsible factors concerned in renal infections.

A classification of congenital and acquired mechanical obstructive lesions of the urinary tract presents not only a varied, interesting and most comprehensive tabulation, but from a clinical and etiologic standpoint, the basis of a host of uropathic conditions incident to the development of urinary stasis, hydronephrosis and secondarily renal infections and calculus formations.

In the advent of ascending infection whether the underlying obstructive factor is mechanical or neurogenic in origin, there develops certain overlapping steps of advancement in real involvement, and these stages are designated by the terms pyelitis, pyelonephritis, infected hydronephrosis, and pyonephrosis and their common denominator is pyuria while in cortical abscess, renal carbuncles, and perinephritic abscess, the presence of pyuria depends upon whether extension has progressed and involved a minor calyx and the renal pelvis. In pyelitis the infection has either come from above, in which case the renal parenchyma is first involved or if from below it involves the renal pelvis first and secondarily the parenchyma, and the end result is pyelonephritis. Uncomplicated pyelitis is infrequently found as visualization of the renal pelvis shows in most cases that there is dilatation of the renal pelvis incident to an obstructive process and that the condition is actually an infected hydronephrosis.

A pertinent question now arises as to what constitutes puyuria and the urologist on a Hospital Staff is constantly requested by the medical, surgical, and pediatric services to determine the source and cause. In the immediately voided and uncentrifuged specimen of urine from the male or catheterized specimen from the female the presence of five or more leucocytes per low power microscopic field is considered pathologic and its origin should be investigated.

In a diagnostic urologic investigation for the determination of the source of pyuria and at the same time attempt to visualize the cause of its presence, the procedure is promptly executed on the modern cystoscopic and pyelographic table. A table of this type with its flexibility and mechanism for raising the patient from the horizontal to the upright position is most convenient as the whole study is quickly performed under local anesthesia with little discomfort for the adult patient. The child will need an anesthetic. Cystoscopic inspection is made of the urethra, vesical neck, bladder, and renal function is determined. Ureteral catheterization procures a specimen of urine from each kidney for microscopic examination and culture. A scout x-ray picture is then taken and pyelograms in the recumbent and erect positions rapidly made. The source of the pyuria is determined and culture shows the type of organism. The scout film will show a calculus, if present, and the pyelographic study localize it in the renal pelvis or calices, the presence and extent of hydronephrosis, caliectasis and any excessive renal movability, rotation or congenital malformation. The following chart illustrates the clinical laboratory, cystoscopic and pyelographic differential diagnostic findings in the four chief types of renal infection:

Differential Diagnosis

	Pyelitis	Hydronephrosis Infected	Pyelonephritis	Pyonephrosis
Urine	Pus cells Bacteria	Pus cells Bacteria	Pus cells Bacteria	Pus cells Bacteria
Renal function as determined by intravenous indigo carmin	Normal	Normal or slight delay	None	None
Roentgenograms	Calculus + or —	Calculus + or —	Calculus + or —	Calculus + or —
Pyelography	Ptosis + or —	Ptosis + or —	Ptosis + or —	Ptosis + or —
	Slight Dilatation of renal pelvis or caliectasis	Enlarged Renal pelvis and calices	Clubbing and feathery appearance of minor calices	Large pelvis with effacement of calices

The determination of renal function by either intravenous indigocarmin or phenolsulfonephthalein at the time of the cystoscopic examination enables a prognosis to be immediately estimated of the involved kidney's functional capacity and its potential usefulness, providing its integrity be established.

A comparative study of Tables I and II, particularly in regard to renal function as determined by intravenous indigocarmin and observing its appearance cystoscopically, shows in the cases of pyelitis in Table I that the involved kidney has good function and the infection promptly improved or disappeared

TABLE I
Chart of Ten Cases of Pyelitis

Case	Age	Sex	Duration of Symptoms	Kidney Involved R	Kidney Involved L	Predisposing Condition	White Blood Count	Indigo Carmin R	Indigo Carmin L	Urine	Bacteria	Treatment	Result
C. C.	20	F	1 month	R		Ptosis	11,600	10	10	30-35	B. coli	Renal lavage Support	Improved
M. B.	40	F	4 days		L	Tonsillitis Ptosis	12,500	5	5½	Loaded	B. coli	Renal lavage Support	Improved
E. D.	30	F	1 week		L	Ptosis	6,200	6	6	Loaded	No growth	Renal lavage Support	Improved
A. C.	27	F	1 week		L	Ptosis	16,500	6½	10½	12-15	B. coli	Renal lavage Support	Improved
N. P.	24	F	5 weeks	R		Ptosis	11,500	8	4	Loaded	No growth	Renal lavage Support	Recovered
D. M.	27	M	10 days	R	L	Acute Tonsillitis	18,500	8	6	Loaded	B. coli	T & A	Improved
W. E	40	M	4 months		L	Respiratory Infection	12,000	3½	5	15-20	Strep	Renal lavage Sulfa drugs	Recovered
M. L.	32	F	2 weeks	R		Pregnancy	10,000	9½	4	Loaded	No growth	Renal lavage	Recovered
S. E.	34	F	1 month	R		Ptosis	16,000	11	5	Loaded	B. coli	Renal lavage	Recovered
A. B.	36	F	2 years	R		Ptosis	17,000	10	5	Loaded	B. coli Staph alb	Nephropexy	Recovered

TABLE II
Chart of Ten Cases of Pyelonephritis

Case	Age	Sex	Duration of Symptoms	Kidney Involved R	Kidney Involved L	Predisposing Disease	White Blood Count	Indigo Carmin R	Indigo Carmin L	Urine	Bacteria	Operation	Result
S. G.	60	M	5 days	R		Prostatic Hypertrophy	20,000	0	5	Loaded	Strep	Bacteremia Nephrotomy Nephrectomy	Recovered
F. S.	65	M	3 weeks	R		Median Bar Chr. prostatitis	15,500	0	5½	Loaded	No growth	Nephrectomy	Recovered
F. B.	68	M	4 weeks	R		Median Bar Chr. prostatitis Diabetes	15,400	0	6	Loaded	B. coli	Nephrectomy	Recovered
E. B.	38	F	5 weeks	R		Papillary carcinoma of bladder	12,500	0	7	Loaded	No growth	Nephrectomy	Recovered
E. R.	18	F	8 months	R		Uretero-pelvic bands	8,800	0	4	Loaded	No growth	Nephrectomy	Recovered
C. H.	66	M	2 weeks		L	Anomalous vessel	10,000	6	0	Loaded	B. coli	Nephrolithotomy, severed vessel	Septicemia Death
H. K.	55	M	2 months	R		Renal calculus Papilloma of Bladder Diabetes	10,000	0	5½	Loaded	Staph aureus	Nephrectomy	Septicemia Death
M. H.	57	F	4 months	R		Cystitis	7,000	0	6	Loaded	Staph Albus	Nephrectomy	Death Cardiac
E. C.	19	M	10 days		L	Diverticulum of bladder	18,000	5	0	Loaded	B. coli St. albus	Nephrectomy	Recovered
A. S.	70	M	2 weeks	R		Carcinoma of bladder	20,000	0	8	Loaded	B. coli	Nephrectomy	Recovered

with appropriate treatment. In striking contrast the involved kidneys in Table II failed to show any appearance of indigo carmin in 20 minutes of observation and upon nephrectomy each kidney showed marked pyelonephritis. Upon examination and section of a kidney of the acute and diffuse interstitial suppurative type, the surface may show many superficial cortical abscesses of various sizes and the cut surface areas of suppuration, some small and others larger due to a coalescence of several small bacterial localizations. In many instances the kidney is greatly congested and swollen and not unlike that of the large white kidney of acute nephritis. The mucosa of the pelvis is reddened, and may show punctuate or diffuse submucous hemorrhagic areas and superficial ulceration. When the renal parenchyma has become involved the histo-pathologic picture is nearly the same in early coccic hematogenous and in early bacillary ascending renal infection.

If the patient survives the acute attack and there is no complicating congenital or acquired obstructive lesion, the infection usually is self-limited and in a few weeks in favorable cases the kidney may become quite normal. In some instances the cortical abscess ruptures with the formation of a perinephritic abscess, which demands incision and drainage, leaving an excellently functioning kidney. However, in the severely infected kidney sclerotic contractions may cause compression and contraction and the result is pyelonephritic atrophy —and in the presence of an obstructive process the condition progresses to an infected hydronephrosis, calculous pyelonephritis, and finally pyonephrosis.

Early Symptomatology. In pyelitis neonatorium or urinary infection in the newborn the condition, although not uncommon, is seldom recognized and properly diagnosed. The majority of cases reported have been in boys. Pyuria and positive cultures obtained from the urine indicate the presence of infection. The original site or focus of infection is not readily determined. Campbell reports a boy who clinically manifested acute pyelonephritis and at autopsy showed bilateral diffuse suppurative nephritis secondary to an umbilical stump infection. The temperature chart may show a continuous or intermittent course—acute gastro-intestinal disturbances, vomiting, distention and diarrhea may predominate. The diagnosis is made chiefly by the urinary findings.

Pyelitis of Diaper Age. This period extends up to the third year and the symptoms are rarely indications of urinary tract infection. In a typical case the condition is ushered in with chills, fever, restlessness, general apathy and prostration. The temperature range may vary from 102 to 106 degrees. Repeated chills, high fever, profuse perspiration, nausea and vomiting are symptoms indicative of persistent obstruction and are objective directives for prompt urologic investigation. Bacteremia is a common occurrence.

Pyelitis in children of three years of age and over does not present as difficult a diagnostic problem as the child is usually able to call attention to the symptoms of frequency and dysuria, particularly when vesical symptoms present themselves. However fever and gastro-intestinal episodes in the absence of urinary tract symptoms may cause diagnostic errors. The urinalysis should make the diagnosis conclusive.

In the majority of cases the onset is sudden and the chills and fever often suggest pneumonia. The accompanying gastro-intestinal symptoms include nausea, vomiting, abdominal distention, rigidity, constipation or diarrhea. Cerebral symptoms may include intense headaches. The child may become delirious, develop convulsions and the neurologic manifestations of meningitis and finally coma.

An interesting study of the late effects of acute pyelitis in girls was made by Wharton, Gray and Guild from the Harriet Lane Home for Invalid Children in Baltimore. Thirty patients returned for follow-up study and these were divided into two groups (a) Those who had only one attack of pyelitis in childhood, 9 cases and (b) those who had more than one attack, 21 cases.

Group a. In the 9 cases, in which there was an average of 13 years, after an attack of pyelitis, urologic examination showed only 3 cases to have normal urinary tracts. Six showed definite abnormalities, 5 gave positive cultures, and one girl who had streptococci in urine 8 years ago has the same organism at the time of the study.

Group b. In those having had more than one attack, 21 cases were studied on an average of 10 years after the last flare up. 9 cases showed normal urinary tracts, while 11 cases showed abnormal findings. 10 gave positive cultures.

A summary of these 30 patients showed that 17 or 57% have definite abnormalities of the urinary tract, 15 or 50% have positive urinary cultures, 2 have renal calculi, and one has had a nephrectomy. The study forcibly shows that pyelitis in young girls cannot be regarded lightly and that urinary tract obstructions and abnormalities should be adequately corrected.

Pyelitis of adults is seldom found as an isolated infection confined to the pelvis of the kidney in the absence of an obstructive urinary tract lesion. It is, however, frequently encountered in patients with congenital and acquired types of urinary tract obstructions and as a complication of pregnancy. The obstructive process causes renal pelvic distention, and urinary stasis. Bacteria readily gains entrance by the hematogenous or lymphogenous routes and the pathologic process is now properly called an infected hydronephrosis.

The term pyelitis of pregnancy is used broadly to include practically all infections of the ureters and kidneys occurring during the period of pregnancy. Ureteral dilatation develops in practically all pregnant women and in the resulting urinary stasis bacteria readily gain entrance, find fertile soil, little resistance and unless properly managed, ureteritis, pyelitis, infected hydronephrosis, pyelonephritis, and pyonephrosis may follow in sequence. In some well known maternity clinics the incidence of infection runs as high as 14%, infant mortality 10-12% and maternal mortality approximately 3%. The colon bacillus is more commonly found as the invading organism. Staphylococci and streptococci rank next in frequency of occurrence.

The most common symptoms in the average case are chills, fever, nausea, vomiting, malaise, and in severe cases prostration. Locally there may be pain and discomfort in the kidney areas. If cystitis develops, burning frequency, and urgency are additional distressing discomforts.

Prognosis—Acute Pyelitis—Pyelonephritis

I. The mortality in infants—"pyelitis of the newborn" 10-30%
Incidence increased by complications and congenital anomalies

II. Mortality of pyelitis in "diaper age"—children 2 years of age
Coppert—84 cases—12%
Thayson—71 cases—14.6%
Rodkin and Kagnox—72 cases—22%
Babies Hospital, N. Y.—140 cases—22.8%
Caulk—172 cases—High incidence of complications—40%

III. Mortality in children over 2 years of age
Thayson—71 cases—over age of two—0%
Wilkinson—British Medical Journal—3%

Chronic Interstitial Suppurative Pyelonephritis

	Children	Cured	Improved	Died
Campbell ..	580	152-26.2%	246-42.4%	58-10%
Braasch & Cathcart	2,040 adults	33%	33%	Unimproved 33%
		Pyelitis of Pregnancy		
Traut	136 cases		4 deaths	3%

Treatment. Thorough investigation and diagnostic procedures which should include an exhaustive search of the entire body for possible foci of infection and visualization of the entire urinary tract, preferably by retrograde pyelographic studies and determination of type of infecting organism are imperatives before an intelligent outline or plan of treatment be constructively formulated.

Good judgment must be exercised as regards cystoscopic and pyelographic procedures; particularly when the patient is acutely ill. However, the patient acutely ill with chills, fever, and gastro-intestinal symptoms secondarily to an obstructive urinary tract lesion and associated infection has an infinitely better recovery outlook if an early diagnosis is made and the obstructive process immediately eliminated.

Many patients ill from acute hematogenous infections of the kidney and who have no urinary tract obstruction, congenital or acquired, recover practically simultaneously with the disappearance of their acute respiratory or other type of focal infection. The possible presence of a urinary tract obstructive process should be investigated in every instance.

General measures of treatment in acute renal infections:

1. Culture of urine
2. Complete rest in bed and bland diet
3. Adequate fluid intake and supplemented when necessary with additional amounts by bowel, subcutaneously or intravenously, unless specifically contraindicated. 5% glucose solution in water or salt solution is most excellent for intravenous use.
4. Correction of constipation and changing of intestinal flora. Castor oil is preferable when colon bacilli bacciluria is present.
5. Promotion of diuresis and perspiration. Hot wet packs and acetylsalicyclic acid are excellent for promoting skin elimination.
6. Estimation of hydrogen ion concentration of the urine and the blood. This procedure is particularly stressed as some urinary antiseptic preparations are more potent in acid urine and others in alkaline urine.
7. Administration of urinary antiseptic preparations
8. Removal of all foci of infection
9. Correction of stasis of urine in ureter and renal pelvis by catheter drainage or surgical procedures.

Medication:

A. Oral

Pyridium—inhibits hemolytic streptococci in urine

Methanamine—effective in acid urine

Mandelic acid—effective for streptococcus faecalis

Sulfa drugs—sulfadiazine—effective for streptococci and staphylococci

Penicillin—effective for streptococci and staphylococci

B. Intravenous:

Neo arsphenamine and mapharsen are bacteriostatic and bactericidal for gram positive cocci and streptococcus faecalis

Mercurochrome:

5 to 10% of a 1% aqueous solution in 500 cc. of normal salt solution stimulates the reticulo-endothelial system. Follow up with sulfadiazine orally ½ to 1 gram q.i.d. or Sodium sulfadiazine—10 cc. of 25% solution diluted with 40 cc. sterile water intravenously.

Blood transfusions—multiple

C. Intramuscular:

Penicillin—100,000 to 1,000,000 Oxford units, effective for staphylococcic and streptococcic infections

The treatment of pyelitis of pregnancy should be practically the same as pyelonephritis. The incidence of acute pyelitis during pregnancy is greater if she commences the pregnancy with a chronic urinary infection. Baird found in his study of 87 women who had pyelitis during a former pregnancy, 46 had pyelitis during subsequent pregnancies. Obstructive urinary tract lesions must be differentiated from interference with drainage caused by the pregnant uterus and corrected.

A true uretero-pyelitis may exist in cases in which the gravid uterus produces stasis of urine but unless relieved or in severe infections pyelonephritis develops which is manifested clinically by chills, higher fever and greater toxicity.

Should rest in bed with the foot of bed elevated, supportive measures, and adequate chemotherapy prove ineffective, ureteral dilatation and catheterization is indicated. The ureteral catheter may be allowed to remain in situ for 7-10 days, if properly supervised and its patency maintained.

Progressive renal damage as evidenced by increased nitrogen retention in the blood, persistent high fever and toxemia, uncontrolled or influenced by therapeutic measures are factors to be considered in the interruption of pregnancy.

CONCLUSIONS

1. The clinical finding of pus in the urine is a directive of prime importance for diagnostic investigation.
2. Urinalysis, including culture, should be a routine, in babies and children with obscure causes for chills, fever and gastro-intestinal episodes.
3. Visualization of the urinary tract for congenital malformation and obstructive lesions, preferably by retrograde pyelography is most essential.

4. The obstructive lesion in the interrupted pregnancy case should be adequately corrected.
5. The establishment of free urinary tract drainage prevents advancement of renal destruction and eliminates infection.

1900 Spruce Street.

Discussion

Dr. L. W. Anderson (Wilmington): I want to compliment Dr. Birdsall on his excellent presentation. There is little that I can add to what has already been said for he has covered the subject most thoroughly. However, I may mention—I don't recall his having mentioned it—that these cases, after they have become subacute or chronic, will frequently present themselves with symptoms of cystitis, or frequency of urination. In other words they may go to their family doctor complaining of bladder trouble and the mistake may be made of irrigating these patients for weeks and even months with the hope of helping them. This does not work.

Dr. Birdsall: The point Dr. Anderson made I think was a very important point, because a great many of these patients come to you complaining particularly of urinating frequently, and the bladder is the mouthpiece for the whole urinary tract. I remember a case of a patient that had gone from Norfolk to Richmond and to Roanoke and was treated for her cystitis. The doctor asked us to make an investigation of the tract and we found nephritis, yet all of her trouble, from her standpoint, was bladder, but the site of her trouble was up in her kidneys.

EARLY MALIGNANCY OF THE LARYNX: ITS DETECTION AND TREATMENT[*]

Karl Musser Houser, M. D.,[**]
Philadelphia, Pa.

To understand the implications of malignant disease of the larynx we must first recognize two main classifications of this condition. These terms, based on the region in which the growth is found, are (1) intrinsic and (2) extrinsic lesions.

The intrinsic lesion is found on the vocal cord, subglottic region or laryngeal ventricle, while the extrinsic variety arises from an area without the laryngeal interior such as the epiglottis, the arytenoids, the ventricular bands, the pyriform sinus or posterior surface of the cricoid cartilage. This distinction in malignant laryngeal lesions is of great importance for the prognosis and treatment is entirely different in these two categories. In the intrinsic group cure can be obtained in about 80% of the cases, whereas in the extrinsic variety about the best one can do is to make the patient more comfortable while awaiting the inevitable. The mixed type is merely a combination of these lesions in an advanced state.

Practically all malignant laryngeal lesions are the squamous cell carcinoma variety, slow growing and radio resistant. A few are basal cell, papillary or adenocarcinomas. These growths are most common in males between the ages of forty and sixty years, but may occur in either sex and at any age. Sarcoma of the larynx is quite rare.

Metastasis from intrinsic cancer occurs late due to the rather sparse lymphatic drainage from the vocal cords and subglottic region. Extrinsic forms, however, spread quickly to the cervical lymph nodes, hence the marked difference in prognosis.

Unfortunately carcinoma of the larynx may exist for weeks or even months before symptoms become pronounced. In the intrinsic type, vocal changes are almost always the first symptom. This may amount to nothing more than occasional huskiness with some tendency to clear the throat. Fatigue and smoking intensify these symptoms, and as a result the patient often explains the condition on these grounds. As the process advances the symptoms are exaggerated until hoarseness is constant and marked. Pain is a late symptom and occurs only when considerable infiltration has occurred. Very late symptoms are cough, dyspnea, stridor, hemorrhage, anemia, loss of weight, dysphagia and internal metastasis.

In extrinsic lesions the initial symptoms are usually a sense of throat irritation, the sensation of fullness or a foreign body, soreness and a tendency to aspirate food particles. Marked dysphagia occurs with infiltration. These lesions tend to ulcerate early and cause pain on swallowing, so that the taking of food becomes extremely difficult. Sometimes pain in the ear is a prominent symptom. Aphonia or less marked vocal symptoms occur late in the development of the lesion. Dyspnea is present only after the lesion is large enough to partially obstruct the air way.

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The diagnosis of this condition is, of course, of great importance. Intrinsic carcinoma may attack any part of the cord, but is most often found in the middle or anterior third. At first unilateral it appears as a small area of the cord abnormal in appearance. It may be nodular, papillomatous or simply a thickening infiltration. Fixation of the cord does not take place until the growth is well advanced. Inspection of the subglottic region and the laryngeal ventricles must be carefully carried out in all cases.

The extrinsic lesion begins as a hard nodular mass which soon distorts and destroys the normal landmarks of the hypopharynx. Early ulceration takes place, rapid spread to the cervical glands is noticed and in general the course of the disease is much more dramatic, rapid and lethal.

The diagnosis in all forms is made by history, examination and biopsy. The examination may be made indirectly with the laryngeal mirror, and often biopsy material can be secured in this manner by the use of the basket-punch forceps. As a rule, however, if a suspicious lesion is found on examination with the laryngeal mirror, it is more exact to subject the larynx to direct laryngeal examination and secure biopsy material during this examination.

Syphilis and tuberculosis of the larynx must always be considered as possibilities in cases of chronic hoarseness. Serological tests should always be made, if possible, antiluetic treatment instigated. The lesions of tuberculosis objectively are usually fairly easy to differentiate from the neoplastic variety. Be suspicious of neoplasm in all cases when vocal rest and other forms of treatment, such as antiluetic treatment in lues do not cause objective and symptomatic improvement in several weeks.

Untreated laryngeal carcinoma always ends fatally, the life expectancy being approximately two years. On the other hand, the statistics of Jackson, Sir St. Clair Thomson, MacKenty, Lewis, Tucker, Clerf and C. L. Jackson show a remarkable increase in cures obtained by laryngo-fissure and total laryngectomy.

In intrinsic cases diagnosed early and subjected to early operation about 80% go through life without recurrence.

For intrinsic carcinoma of the larynx, surgery offers the only hope. Laryngo-fissure if the lesion is confined to one cord and has not invaded the arytenoid or crossed the anterior commissure. Total laryngectomy if the lesion is advanced. The former operation removes only a part of the voice box and is desirable, if practical, as the patient retains a functioning voice. Total laryngectomy, of course, removes the entire laryngeal apparatus and renders the patient voiceless. Some patients learn to communicate fairly well by the development of a pseudo voice or the use of an artificial larynx.

All authorities today condemn the use of x-ray and radium therapy in the attempt to control, arrest or cure intrinsic laryngeal cancer. Surgery gives much more hope, as most of the squamous cell lesions of the laryngeal interior are radio-resistant. This type of treatment is used extensively in attempts to make more comfortable the individual suffering from the non-operative extrinsic type of laryngeal lesion.

In conclusion, suspect all cases of hoarseness and subject them to careful study to rule out intrinsic laryngeal neoplasm. If such lesion is found in an early state, the chances of cure by appropriate surgical measures are as good if not better than the same lesion found in any other locality.

2010 Spruce Street.

Discussion

Dr. Emil R. Maayerberg (Wilmington): I have thoroughly enjoyed Dr. Houser's talk. It brought out some very important things for us all to remember. The first is early diagnosis in these cases of laryngeal malignancy. I am afraid that most of us are apt to forget the possibility of malignancy at any age. Unfortunately the carcinoma does not wait; it keeps on growing, and when the patient gets around to seeing the laryngologist it is frequently too late to do anything for him, even surgery of the larynx. I think a safe rule to follow is that when we have a case of changing voice, even though not marked, and a cough, and expectoration, that does not respond quickly to ordinary treatment the patient should be shifted to a physician knowing a great deal about the larynx—somebody who is able to recognize malignancy in its early stages.

The extrinsic-type cancers of the larynx are more apt to develop more definite symptoms, because the patient complains of difficulty in swallowing and painful swallowing, and if treatment does not relieve him quickly enough, it usually shifts off somewhere else. The same with the intrinsic cancer, so, I say that early diagnosis is the real treatment of either type of cancer of the larynx. The earlier the diagnosis and treatment, the better chance the patient has for life.

Dr. J. F. Hynes (Wilmington): I enjoyed Dr. Houser's paper very much and I was particularly interested in his plea for early diagnosis. I see six or eight or sometimes ten cases of cancerous larynx over a year, and some are quite advanced. I am thinking of the extrinsic cancer; those are the ones most frequently referred to me. The patient gives a history of chronic sore throat, enlargement, and sometimes nodes. Many of those patients have never had even a meer examination of the larynx until a week or two before being referred for paliative x-ray therapy, and I am afraid I have seen one or two patients who have been under treatment with a nose and throat man for a time, without recognition of the disease. Adequate examination of such patients—I am sure it is easy enough, with a little practice, to use a mirror, is of the utmost importance.

I might mention here that it is possible to make an examination of the larynx without the usual tools; by dropping the patient's head over the table and using a head light, you can look down some people's throats, without special instruments. Internal biopsy goes without question. Sometimes those patients have been treated for syphilis before it is recognized they had also a cancer. The incidence of laryngeal cancer, I suspect, may be increased in luetics.

Finally, and I don't mean to take issue with Dr. Houser in his wide experience, but there are cases of intrinsic cancer that have been treated by x-ray with excellent results, usually on the basis of the physical condition. I have in mind an old lady treated by x-ray at 75 and who died at the ripe old age of 85 without a recurrence. Another, an old man, with bronchiatric cancer, was successfully treated. Such cases, where surgery is rather too risky, hove done very well, and I am inclined to think the intrinsic cancer picked up early enough gets along pretty well if treated in the proper fashion. Of course, there is too much evidence on the side of the value of surgery, but I do know some are cured with x-ray treatment.

Dr. A. J. Strikol (Wilmington): I think the last speaker is all wrong when it comes to diagnosing or examining the larynx by having the head in a certain position. Even under the most favorable conditions it is difficult sometimes to see all of it. I do not think anybody ought to rely on such methods. In fact I do not rely on the biopsy and directoscope entirely. We sometimes have to think of three or four things. But I feel the way this other gentleman who spoke feels, if I have suspicion of the lesions, I would rather send the patient to a laryngologist who is doing a lot of that kind of work, who can handle the case much better, and with better results. The intrinsic cases, diagnosed early and operated upon early, show about 80% cures.

We do not know why it occurs primarily in men, one to eight or one to nine. In my practice I have had 30 or 40 cases of malignancy of the larynx in men, and only one female.

I again want to say I enjoyed the talk, and again I want to warn that Dr. Hynes was a little misleading when he said he can see and diagnose by having the patient in a certain position, when the best of examinations sometimes fail.

Dr. Lemuel C. McGee (Wilmington): Physicians when discussing early diagnosis are characterized by proneness to stimulate one another to early diagnosis, and point out or indicate their consequent errors in a busy practice. I want to mention an example on the encouraging side, for me: Last year, in industrial examinations, I found three instances of early carcinoma on the larynx, which was detected by examining physicians on the basis of the employees referring to the fact that they had been hoarse for a variable period of time. There were no other symptoms and the examining physician in each instance, in spite of his other duties, was eagey enough to grab a laryngeal mirror, take a look, and found enough to follow through in each instance. The carcinomas have been removed. So, as far as I am concerned, there is an encouraging side: that progress has been made in doing just the thing you would like to see done.

Dr. Houser: There are just a few things I would like to mention briefly. One, the question of biopsy. In the earlier years there was some fear that biopsy might stir up a lesion of this sort and cause it to run wild, so that before you could do something about it, it would result in such a growth that conditions would be out of hand. I think that this fear is unfounded. One can do a biopsy and have an examination made with plenty of time before conditions get worse, to go ahead with the proper procedure.

I agree with you doctor, about the improvement in the diagnosis and the examining of laryngeal patients, especially by the younger physician. For the last, certainly 15 or 20 years this condition has been drummed into the medical student, and it has been impressed on his mind, that he should investigate cases of laryngeal disfunction. In addition to that I think most medical students are today trained in their out-patient department work to know how to use the laryngeal mirror, which is certainly not true of, I would say the older generation of medical men. Most of these cases that have not been studied by mirror examination will come from the doctor who is not familiar with the use of the laryngeal mirror. As someone has said, the technique of mastering the laryngeal mirror is relatively simple.

Now with regard to the elective treatment of whether you use radium or surgery; there is no question about it that cures of these laryngeal lesions have resulted from radium alone; and where there are other extenuating circumstances that prevent surgery that, then, is the thing to do. But I advise anyone of you who develop a lesion, if you can have surgery performed, your chances of permanent improvement are decidedly better than where radium alone is used. Thank you, very much.

METHODS OF TREATMENT AND TRANSPORTATION OF COMPOUND FRACTURES OF THE LONG BONES

Lt. Col. George O. Eaton, M. C., A. U. S.
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Transportation of the recently wounded is more commonly referred to as evacuation since its direction is toward the rear. Treatment and evacuation are intimately related to each other since the amount of treatment at any one medical unit will be influenced by the availability of transportation and the type and duration of travel. The condition and prognosis of the patient is seldom improved by travel in the theatre of operations. Travel is often arduous as well as hazardous and subject to unavoidable delays en route. Evacuation of casualties is one of the chief responsibilities of the medical corps. It is a standing order that the patient will not be evacuated until, from a clinical stand point, it is safe to move him. Evacuation must be prompt in order to allow combat units to preserve their mobility and in order to promote morale in the remaining effective troops.

We speak of echelons of medical treatment and echelons of evacuation. The first echelon of treatment is the company aid man who accompanies troops into battle and who renders skilled first aid to the injured on the field of battle. The first echelon of evacuation is the litter carrier from the battle field to the battalion aid station which is usually situated two to three hundred yards behind the front. The lightly wounded or walking wounded may make their way unaided. Normally, ambulances are substituted for hand-carried litters at the forward limit of traffic and hospital trains for ambulances at the forward limit of rail traffic. Since so much of the Pacific campaign was fought in uncivilized and undeveloped country, long hand carries, often under cover of darkness, were common. Many a Yank and Aussie can thank the loyal and sturdy fuzzy-wuzzy of New Guinea for his successful evacuation to the rear. Any vehicle which rolls, floats or flies was utilized as the circumstances dictated.

The sorting of casualties occurs at every medical installation in the chain of evacuation and hospitalization. Those physically fit are returned to duty. No patient is sent farther to the rear than his physical condition requires or the demands of the military situation permit. Statistics show that 68% of all battle wounds are wounds of the extremities and that 50% of this group are compound fractures. Because of the long duration of treatment and convalescence, these patients are evacuated to general hospitals in the rear areas. Such cases normally pass through, and are treated by, four echelons in the overseas theatre, the battalion aid station, the clearing company, the field or evacuation hospital, and the general hospital.

Wound management has been classified by Col. E. D. Churchill into three phases: initial, reparative, and reconstructive. The first two concern the overseas theatre, the last is the mission of the hospitals in the United States, which is referred to as the zone of the interior.

The initial treatment consists of first aid and shock therapy which is done on the battle field and at the battalion aid station, and then definitive surgery which is done at the clearing company. These efforts are directed toward the preservation of life and limb. On the battle field, morphine sulfate, sterile dressings, tourniquets and splints are applied; plasma being available for use as indicated. At the battalion aid station, the medical officer inspects the wounds, adjusts the splint, and supervises shock therapy. One of the greatest medical advances of this war was the recognition of the superiority of whole blood over plasma for the treatment of shock. Except in the case of burns, transfusions of whole blood were substituted for plasma more and more as our experience increased. It became common to use four to six litres in a single case. The bank blood flown from the U. S. was packaged so that it could be administered just as simply as plasma. Serious transfusion reactions were very infrequent and the effectiveness of blood in combatting shock was found to be far superior to plasma.

The clearing company is the most forward medical unit equipped for operative surgery. Working in conjunction with these units are the portable surgical hospitals and the surgical teams. Here, the soldier has his first opportunity for operative surgery, namely the all-important debridement. Upon arrival, reevaluation of the patient as to the presence of shock is accomplished, and if present, must be given precedence over operative surgery. In compound fractures, definitive surgery consists of adequate debridement, approximate reduction, and immobilization of the extremity.

Two misconceptions existed during the early stages of the war pertaining to the subject of debridement. One was that debridement of a wound became an obsolete procedure with the advent of the sulfanamides. The availability of sulfanamides and penicillin, useful chemo therapeutic agents as they are, has not lessened the importance and need for adequate debridement. The second misconception was that debridement consisted only of the excision of damaged skin and the extraction of the missile from the depths of the wound. Debridement of a wound of the extremity is adequate only when all tissues traversed by the missile have been explored, all devitalized tissue excised, and the operative wound left wide open. Bleeding points are ligated but not even partial closure of the wound is indicated or justified. During a visit to a portable surgical hospital in the course of my duties as orthopedic consultant, I observed a surgeon closing an extensive wound of the upper arm. He had adequately debrided the wound and the tissues were laid open from the shoulder to the elbow. I found him suturing the skin in the upper and lower portions of the wound because he apparently was a little awe stricken at the size of the wound when he completed the debridement. He was easily persuaded to remove the sutures and leave the wound entirely open. Anyone who has tried to culture anaerobic organisms in the laboratory knows how poorly these organisms tolerate air. The debridement is aimed at prevention of infection particularly anaerobic infection. One seldom saw gas gangrene except in wounds involving large muscle masses and in which the wound had been allowed to seal over the tract caused by the missile. Debridement involves excision, decompression, and aeration of the wound. The term reparative surgery is applied to the secondary closure of these debrided wounds and is accomplished four to twelve days after debridement. Secondary closure is successful in a high percentage of cases if the wound has been properly debrided and appears clean on removal of the original dressing. It is my conviction that reparative surgery shortens the healing time, markedly reduces the amount of scar tissue, and that it represents an important advance in war surgery.

At the conclusion of the operation of debridement the fracture is approximately reduced. I use the word approximately advisedly. The fracture is usually markedly comminuted. During debridement only completely detached fragments of bone are removed. Because of the extensive damage to bone and soft tissue the tendency to shortening and over riding is minimal. The aim of reduction is restoration of normal length and alignment rather than anatomical reduction of displacement. Internal fixation is justified only if persistent displacement of a fragment jeopardizes the function of a major nerve or vessel.

No satisfactory substitute for the plaster cast for the immobilization of fractures has been developed. Evacuation of compound fractures of long bones in the various types of traction splints such as the Thomas splint, the Tobruk splint, the hanging cast, resulted in complications due to excessive mobility of the fragments, interference with circulation, aggravation of infection, and shock. As a result of such experience, all compound fractures after debridement were evacuated in padded plaster casts which immobilized at least one joint above and below the fracture. On arrival at the general hospital in the overseas theatre, plaster casts were bivalved, wounds inspected and, in the case of femurs, balanced traction substituted for plaster cast immobilization. The time lapse between injury and arrival at the general hospital varied from an average of twenty-one days in the early days of the New Guinea campaign to one to three days during the latter part of the Luzon campaign. This time lapse brought to light a principle not previously emphasized, and that is, a simple fracture of the shaft of the femur will develop shortening and over-riding if traction is not maintained from the time of injury; in contradistinction, a compound, comminuted fracture of the femur shows much less tendency to displace in plaster and requires less traction to restore and maintain full length.

Distraction of fragments, next to local circulatory damage, appeared to be the leading cause of delayed and non-union. Skeletal traction with Kirschner wire was the standard method of treatment and the early commencement of massage, baking, quadriceps exercises and active motion of the knee and ankle joints was instituted. The fractures of the other major long bones were usually treated by immobilization in padded plaster casts until union was clinically firm. The use of windows in casts for purpose of frequent dressing and examination of the wounds was considered ill-advised. Our criteria for a healthy wound was normal temperature, a lack of pain, and normal circulation in the toes or fingers, even though it was draining under the cast. Offensive odor alone was not sufficient indication for a change of cast.

Osteomyelitis was a common complication of a compound fracture incurred in battle; sepsis however, was very uncommon. The absence of sepsis is a tribute to the nutrition and general physical condition of the soldier, to the value of adequate debridement, and to the value of penicillin which was routinely employed in all compound fractures.

We saw many cases of tetanus amongst the wounded Filipino civilians; we saw none amongst our immunized American soldiers. We saw many cases of gas gangrene amongst the Filipino civilians who lacked medical treatment until our forces were established in their community; we saw none amongst our soldiers if they were adequately debrided.

The reconstructive phase of the treatment of compound fractures is concerned with gaining the maximum function of the limb in which there has been a permanent loss of bone or soft tissue. It involves various types of skin grafting, bone grafting, nerve suture or transplant, arthrodesing operations and tendon transplants. This is too large a subject to discuss in this paper.

To summarize the lessons we have learned and the advances in war surgery which have occurred as a result of our experiences in this war as pertains to the treatment and transportation of compound fractures of long bones—First: Whole blood is far superior to plasma in the treatment of shock except when due to burns. Secondly: Penicillin when given in sufficiently large quantities is a valuable adjunct to surgery but does not minimize the necessity for adequate debridement. Thirdly: Debridement to be adequate must include the excision of all devitalized tissue and the decompression and aeration of the entire tract caused by the missile. Lastly: For transportation of a major fracture, there is no substitute for a padded plaster cast which immobilizes at least the joint above and the joint below the fracture.

Discussion

Dr. W. Edwin Bird: (Wilmington) I might ask this question. Dr. Eaton says sometimes as little as five pounds of traction produces an over-pull. Do you have any practical rule that we could apply to civilian life? There was an old rule—I don't know who invented it—that a pound per year up to 20 was about right. I have used it as a rough guide and have added some to it or taken some off. Is there any practical rule we can use in civilian life?

Dr. Eaton: In civilian life the fractures are usually simple and is seldom severely comminuted as with gun and shell fractures. Our usual fracture was where the bone was transformed into an average of six to ten or twelve fragments. The difference between the compound gun shot or shell fragment fracture with destruction of the soft tissue and multiple comminution of the bone was the reason that so much less traction was needed to maintain the full length. In the simple fracture of the femur actually we had more trouble than with a compound fracture because of the fact it would take a variable period of time, say, an average of two weeks to get that femur back to a general hospital and in that time there was displacement or shortening and so on, to the point where about thirty per cent would have to be reduced because traction would not effect a realignment of fragment. The compound, multiple comminuted fractures did not displace in plaster on their way, and if they were a little short in the plaster, they were easily pulled out to full length.

For your simple fracture I think twenty pounds skeletal traction, until you prove by portable x-ray that you have overpulled it, is the ideal weight for the average adult. If you get it late, if you have over-riding, I would not hesitate to put 30 to 35 lbs. on it and incline the bed so as to counter balance, until it could be pulled out. If you have to treat a shaft of the femur without benefit of x-ray you have quite a clinical problem on your hands, estimating whether you have too much or too little pull. In a simple fracture you are apt to make the mistake of not putting on enough, and in a compound fracture, if badly comminuted, you might be apt to err on the side of putting on too much traction.

THE FUNCTION OF THE IMMUNIZATION CLINIC IN THE GENERAL HOSPITAL

George J. Boines, M. D.,*
Wilmington, Del.

In the past, general immunization procedures were reserved for or practiced only on those going to duty in the contagious disease hospital. Usually all the nurses and personnel were immunized against diphtheria, scarlet fever, smallpox, and typhoid fever. In Wilmington all the student nurses affiliate with the Doris Memorial Unit of the Wilmington General Hospital, and before being accepted they must have negative reactions to Schick and Dick tests. This practice has eliminated cases of diphtheria and scarlet fever among the nurses. A survey made among the Wilmington hospitals in 1935-1939[1] showed that fifteen nurses had contracted scarlet fever and five had contracted diphtheria while on duty in the contagious unit. Immunizations were not done systematically prior to 1939. Since 1939 we have immunized for scarlet fever all of the student and graduate nurses and a large proportion of the hospital attendants who came in contact with children at the Wilmington General and Delaware Hospitals.

In spite of the fact that immunization against scarlet fever has been practiced for many years in contagious disease hospitals and many institutions with a marked reduction in the number of contact infections, one still hears of much opposition from physicians who are afraid of reactions and who doubt the effectiveness of the procedure. We have inoculated a great number of small children over two years of age without any uncomfortable reactions and thus far without any of them developing scarlet fever subsequently. We have also noted a marked reduction in the number of those becoming ill with the formerly prevalent streptococcic throat.

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* Chief of the Department of Communicable Diseases, St. Francis Hospital.

The method of immunization is described in detail in many publications [1,2,3,4,5]. The intradermal method is the one of choice, using 0.2 cc. of each of the five doses intradermally on the outer aspect of the arm, reserving the anterior aspect of the forearm for the Dick tests. The outer arm is used because of the possibility of immunizing the skin of the forearm with the injection so that when we repeat the Dick test it might be negative due to local skin immunity and not because of the general immunity of the individual. In children it has been our custom to use 0.2 cc. of the first four doses with very satisfactory results. The Dick test is always repeated two weeks after the fifth injection, and if found positive, the last dose is repeated. It will be found that over 95% of those injected will be negative. Our experience is limited to the use of the scarlet fever toxin.

The problem of preventing tuberculosis and contagious diseases in the general hospital and avoiding contacts and cross infections from patients who are admitted through error is one of importance. Admission of such patients into the general hospital without isolation facilities is not very frequent, but it does occur, usually during epidemics. This acts as a source of infection to the nurses as well as to other patients, especially in the pediatric wards. Such an exposure means that all contacts must be tested, and if positive, given passive immunization followed by active immunization. This must be done not only on the hospital personnel but on the exposed patients as well. All personnel concerned with the handling of a patient, especially the nurse and the doctor, should bear in mind that the chief mode of transmission of infectious disease is by direct or indirect contact; therefore hands must be kept clean and away from the face and mouth. As Dr. Hoyne[2] points out, every hospital should be required to have a small isolation unit where student nurses and other hospital personnel can be taught the principles of medical asepsis, diagnosis and treatment in the care of the common contagious diseases. With widespread teaching in testing and immunization there is no question that such diseases as diphtheria, scarlet fever, pertussis, tetanus, the typhoid-paratyphoid group and smallpox can be easily minimized.

The field of preventable diseases has developed so much in the past few years that the average physician has not been able to keep up with all the preparations and procedures. The recent war has emphasized conclusively that active immunization, systematically applied, will prevent many diseases. It has also been shown by many workers that the prevention of many of the childhood diseases is now possible and safe by the use of refined products and improved methods.

The types of preparations have also increased in number. Table I shows the number of products which are in current use in the immunization field.

TABLE I
Immunization and Testing Products in Common Use

1. Diphtheria toxoid, alum precipitated—for children.
2. Fluid toxoid for adults (over 12 years of age).
3. Diphtheria antitoxin.
4. Diphtheria and tetanus toxoid.
5. Diphtheria, tetanus and pertussis toxoid.
6. Scarlet fever toxin for Dick test.
7. Scarlet fever toxin (Tannic acid precipitated) for immunization.
8. Scarlet fever streptococcus toxin for immunization.
9. Scarlet fever Schultz-Charlton test.
10. Scarlet fever antitoxin.
11. Pertussis intradermal skin test for susceptibility.
12. Pertussis vaccine.
13. Pertussis toxoid—alum precipitated.
14. Tetanus toxoid.
15. Tetanus antitoxin.
16. Gas gangrene antitoxin.
17. Typhoid and paratyphoid fever vaccine.
18. Smallpox vaccine.

19. Measles—Immune globulin.
20. Influenza Virus Vaccine, Type A and B.
21. Rocky Mountain Spotted Fever Vaccine.
22. Brucellosis test—intradermal, brucellergin and serum.
23. Staphylococcic toxoid.
24. Rabies vaccine.
25. Tuberculin test—Mantaux.
26. Typhus vaccine.
27. Cholera vaccine.
28. Any other test, vaccine or serum can be obtained and administered upon request, such as Antimeningococcic antitoxin, Influenza A Serum, Tick fever, etc.

The dosage and technique of administration of each product depends entirely on the strength of the reaction likely to be elicited and on the age of the individual. A highly susceptible person is immunized with reduced dosage and with caution in order to avoid serum sickness or protein shock as much as possible. The interpretation of the test is important before immunization is undertaken. Tests should be done under aseptic precautions and the material injected intradermally, producing a visible wheal in order to produce the proper reaction. Before any injection is given, the patient must be tested for susceptibility—this is more important when horse serums are injected. Table II points out a few of the precautions which are always kept in mind.

TABLE II
Precautions Before Injection of Serum

1. Always test skin for any serum reaction by intradermal test; 0.1 cc. or diluted 1:10.
2. Conjunctival test: One drop of serum in eye. If positive: redness, blood vessels prominent, eyelids swollen. May relieve conjunctivitis by dropping epinephrin in eye.
3. Tourniquet when possible.
4. Have epinephrine ready in syringe.
5. Warn patient about serum reaction 7-10 days later.
6. Have patient wait 15 minutes to observe reaction.

It is generally agreed that passive immunity by means of the antitoxins, rabbit sera, or human convalescent sera are safe and effective when used under the proper precautions as outlined in Table II above, and when administered early in the disease.

Table III lists diseases which are preventable by active or passive immunization or by both methods.

TABLE III
Preventable Diseases

I. ACTIVE IMMUNIZATION
  A. EXOTOXIC DISEASES
    1. Diphtheria
    2. Scarlet fever
    3. Tetanus
  B. ENDOTOXIC
    1. Whooping cough (Pertussis)
    2. Typhoid
    3. Paratyphoid A & B
    4. Cholera
    5. Plague
    6. Staphylococcic infections
  C. VIRAL AND RICKETSIAL
    1. Smallpox (Variola)
    2. Typhus
    3. Rabies
    4. Yellow fever
    5. Rocky Mountain spotted fever
    6. Equine encephalomyelitis
    7. Influenza A & B
II. PASSIVE OR BORROWED IMMUNITY
    1. Diphtheria
    2. Scarlet fever
    3. Tetanus
    4. Pertussis
    5. Measles (Rubeola)
    6. Chickenpox (Varicella)
    7. Mumps (Epidemic parotitis)
    8. Meningitis (Meningococcic)
    9. Rocky Mountain spotted fever
    10. German Measles (Rubella)
    11. Influenza A Rabbit Serum
    12. Gas Gangrene antitoxin

Through the cooperation of the Wilmington City Board of Health an immunization clinic was planned for each of the four city hospitals, the hospital to operate the clinic on the same basis as any other clinic with the Health Department supplying the immunization material. At the present time such a clinic has been established in the Wilmington General and the St. Francis Hospitals. One has also been started in the Delaware Hospital, but for the time being the immunization procedures are limited to the hospital personnel.

The function of the immunization clinic is outlined in Table IV.

TABLE IV

Function of the Immunization Clinic Will Be to Test, Interpret and Immunize the Following:

1. All hospital personnel.
2. Hospital patients upon request.
3. Indigent patients referred by their physicians.
4. Indigent cases referred by any welfare agencies
5. Private cases referred by their family physician.
6. Physicians will be encouraged to acquaint themselves with the immunization procedures so that they can immunize their own patients in their offices.
7. All patients should be sent to the clinic by appointment with the clinic nurse.

The program as outlined at present for the immunization of the hospital personnel is shown in Table V.

TABLE V

Immunization Program for the Hospital Personnel

I. Persons to be tested and immunized if positive:
   1. Student nurses
   2. Graduate nurses on staff who have not been previously tested.
   3. Lay personnel who come in contact with the following:
      1. Diet kitchen
      2. Junior Board Soda Shop
      3. Nurseries
      4. Maternity
      5. Children's floor—ward or private rooms
   4. All hospital residents.

II. Required preadmission immunization for student nurses:
   1. Smallpox—a scar must be present from the successful vaccination of not older than six months. Signed statement from physician.

III. Tests to be done on admission:
   1. Dick
   2. Schick
   3. Schick control
   4. Tuberculin—two strengths—Mantaux.

IV. Immunization to be carried out on those positive:
   1. Scarlet fever—intradermal method.
   2. Diphtheria—fluid toxoid. For children and adults.
   3. Typhoid Paratyphoid—three injections at weekly intervals—½; 1; and 1 cc. of the triple typhoid hypodermically; or 0.1; 0.15; and 0.2 intradermally.
   4. Smallpox—if no recent (within 3-5 years) scar is present.
   5. Those positive to the tuberculin tests should have chest x-ray. If negative, retest every six months, and x-ray if positive. Retest earlier if individual loses weight or has any attacks of "appendicitis" or any severe upper respiratory infection.

V. Throat cultures for Lansfield Group Group A Hemolytic Streptococci:
   1. Culture throats of all individuals working in or entering the nursery or maternity department. If positive to hemolytic streptococci or diphtheria bacilli, treat until negative. Such individuals may work in any other department except nursery, children's wards or diet kitchen.
   2. Individuals with colds or diarrhea should not be allowed in nursery, maternity, children's wards. or diet kitchen.
   3. Culture suspicious throats and nostrils of sick individuals.

VI. Wearing of masks:
   1. Masks should be worn by all individuals in nursery.

VII. Aseptic technique similar to that used in the "Cradle" at Evanston, Illinois, should be considered for use in the nursery and premature room.

VIII. All immunization material to be kept in the refrigerator and Smallpox vaccine in the Ice compartment. All records kept in clinic. Testing and immunization to be done by appointment on specified day. Syringes, needles, sterile material are already on hand. Procedures followed in past years to be adhered to.

IX. Other diseases to be considered for immunization at the clinic when opened, or may be used on any house or dispensary patient upon request.

It is hoped that with time and experience valuable information will be obtained in the practical application of active preventive medicine and that hospital cross-infections and such epidemics as influenza, impetigo. and diarrhea of the newborn may be avoided.

Summary

A program is outlined for the practical operation of an immunization clinic in a general hospital.

The types and purposes of the preventive procedures are noted briefly.

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SURGERY OF THE STOMACH

G. S. Serino, M. D.,**
Wilmington, Del.

In 1945 the author[1] presented in The Journal a report on the successful removal of the entire stomach for cancer, and also presented personal experiences with sub-total resections of the stomach, removing four-fifth of the stomach for duodenal or stomach ulcers. It was stated at that time that the mortality in radical operations for cancer of the stomach will be high, owing to the fact that many patients are advanced in years, with other associated serious diseases, and that they seek surgical aid late, when the disease has advanced for a long period of time, and that since there is no other possible form of treatment the acceptance of desperate risks is entirely justifiable.

It is a different problem when we consider the question of sub-total gastrectomy for duodenal or stomach ulcers. Here the justification for unusual risks does not exist, and one cannot justifiably continue to perform these operations if the mortality remains high. It is because of a low mortality rate and gratifying results the author has continued to perform gastrectomies on a now rather large series of cases.

Peptic ulcer has now been recognized as a rather common cause of indigestion. Some authorities[2] claim that about 1 in 10 of the adult population at some time suffers from a duedenal ulcer. All ulcer patients should be given a trial under strict medical management. Indications for surgical management are: ulcers which are intractable to medical therapy; those in which repeated gross hemorrhages have occurred; those which have perforated; pyloric obstruction which does not respond to medical management; and stomach ulcers in which the question of malignancy can not be definitely ruled out.

The ideal operation for peptic ulcer is subtotal gastrectomy. The more conservative procedures such as gastroenterostomy, or various forms of pyloroplasty serve a very limited role in the surgery of peptic ulcer.

We have experienced little or no difficulty with the usual uncomplicated ulcer operation. However, in those cases in which complications, particularly to adjacent viscera, are found, then the operation of sub-total gastrectomy becomes one in which good surgical judgment and technical skill are of utmost importance if one expects a low mortality rate. Recently the author performed two sub-total gastrectomies in which complications of a severe magnitude were found.

Case 1

T. B., Case 2155, male, age 45, referred by Dr. H. T. McGuire on October 9, 1946. His chief complaints were severe abdominal pain and persistent vomiting for past 3 days. His symptoms began 7 years ago when he noted epigastric distress and occasional nausea. Three months prior to admission he was very sick for about 6 days, with vomiting and pain. The diagnosis at that time was posterior perforation of a duodenal ulcer. The patient refused operation at that time. However, on October 9, 1946 preparation for surgery was started. There is no operation with which we have had experience in which cooperation between the surgeon and internist in the preparation of the patient and in the management of the active stage of the ulcer before coming to surgery is more necessary than this one.

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* From the Department of Surgery, St. Francis Hospital.
** Chief in Surgery, St. Francis Hospital.

The preparation of this patient for surgery was excellent.

Studies revealed 4,900,000 red cells; leukocytes, 15,400; hemoglobin 87%. Urine showed a trace of albumin. Blood sugar, 90 mg. 100cc. Blood urea nitrogen 15mg./100cc. Serum protein 6.8%. X-ray taken in August showed a large ulcer present in the duodenum. The pre-operative preparation consisted of daily lavages, blood and plasma transfusions, parenteral protein (amigen), vitamin, glucose and saline infusions.

Operation, October 15, 1946. The abdomen was opened through a high right rectus incision. Exploration showed that a fistula existed between gall bladder and duodenum; also that the ulcer had perforated into the pancreas. The gall bladder was separated from the duodenum. Since it was in all other respects normal it was sutured and left in situ. A good deal of difficulty was experienced separating necrotic duodenum from pancreas. The pancreas, which was the seat of a chronic abscess, showed pancreatic juice oozing from the duct. This was closed by fine chromic sutures. The pancreatic defect was closed over leaving no raw surfaces. The duodenum was closed very close to the entrance of the common bile duct. The stomach was then resected, a little more than 4/5 of the entire stomach being removed. The Hofmeister procedure was then used bringing jejunum to the cut surface of the stomach for anastomosis. After four days the temperature, pulse and respirations were normal and continued normal until discharged, 14 days after operation. Fluids, protein, salt and vitamins were supplied by intravenous administration for four days, when feedings by mouth were begun.

Pathologic Examination: Dr. Douglas M. Gay. Gross: "Large portion of stomach, measuring 29.5cm along the greater curvature. The pylorus is included. The entire stomach is congested and the mucosa is thick. A small piece of duodenum is included. This is so blood stained that nothing definite can be made out of it.

Microscopic: "The stomach wall is congested and the mucosa is infiltrated with numerous monocytes, lymphocytes and a few polymorphonuclear leucocytes. A section of the duodenum includes the edge of a chronic ulcer. The floor of the ulcer is dense scar tissue. On top of this is granulation tissue and necrotic material. There is no evidence of cancer.

"Diagnosis: Chronic gastritis.
Duedenal ulcer."

This was indeed a severe operation. There were no post-operative complications and the patient was discharged and walked out of the hospital on the 14th post-operative day. Follow-up examinations at this time show the patient to be in excellent health.

The second case report deals with a gastric ulcer as found in the older age group where carcinoma may at times be found in the ulcer bed. Surgical removal of the stomach under these conditions should then include a large area of stomach above and below the ulcer and all gland-bearing areas under observation.

Case 2

J. H., Case No. 2200, age 62, referred by Dr. E. M. Bohan on October 29, 1946. His chief complaints were severe abdominal pain, vomiting and expectoration with some dyspnea. He had complained of epigastric distress and coughing with much expectoration for many years.

Studies revealed 4,200,000 red cells; leukocytes 12,500; hemoglobin 60%. Urine showed a trace of albumin. Blood sugar, 92 mg./100 cc. Blood urea nitrogen, 9 mg./100 cc. The P. S. B. test was normal. Wassermann was negative. Serum protein 6.4%. X-ray examination showed a large ulcer on the lesser curvature of the stomach in its upper third. Electrocardiogram was normal. The patient was having some tarry stools. A diagnosis of bronchial asthma with bronchiectasis was also made. Here again the fine cooperation between the medical staff and the surgical staff was responsible for the proper preparation of the patient for surgery and the perfect post-operative care, especially with reference to lung complications which this patient might develop.

Operation October 29, 1946. Continuous spinal anesthesia as advocated by Lemmon[3] was used. The abdomen was opened through a mid-rectus incision. Exploration showed a large ulcer defect in the lesser curvature of the stomach in its upper third portion. The ulcer margin was firm. A few nodes were palpable in this area. The presence of malignant ulcer was possible. The stomach was therefore removed very high and including the few lymph nodes found. The duodenum was resected and the stump inverted in the usual manner. The stomach was then removed just one inch below the esophagus on the lesser curvature. On the greater curvature about four inches of stomach was left. The Hofmeister procedure was then followed in completing the operation.

The operation was complete in one hour and twenty minutes. Before the operation his pulse was 90; blood pressure 140/70; respirations 22. After the operation his pulse was 92; respirations 24; blood pressure 140/70. His condition was good throughout the operation. Carbon dioxide and oxygen were used during the operation because of the lung pathology present. This was continued for the first post-operative day. On the next day the patient was sitting on the side of the bed. Deep breathing exercises and drug therapy to increase expectoration were used by Dr. Bohan, thus avoiding pulmonary complications. The patient was normal in every respect on the 4th day. His condition is excellent at present, and he will be discharged in a few days.

Pathologic Examination: Dr. Douglas M. Gay. Gross: "Large portion of stomach measuring 29 cm. along the greater curvature. A clear cut ulcer 1 cm. in diameter is present in the mid-portion of the lesser curvature."

Microscopic: "The floor of the ulcer is lined with fibrin and polymorphonuclear leucocytes. Below this there is granulation tissue extending to the serosa. The gastric mucosa is overhanging the ulcer edge as a regenerating fold. There is no evidence of cancer.

"Diagnosis: Ulcer of the Stomach."

Conclusions

1. A discussion concerning sub-total gastrectomy and the more conservative surgical procedures for peptic ulcers are presented.

2. Cooperation between the medical and surgical staff is important in the surgery of peptic ulcer if one desires a low mortality rate.

3. A duodenal ulcer which had perforated into the pancreas and into the gall bladder is presented. A successful sub-total gastrectomy was performed, along with repair of the pancreas and the gall bladder.

4. A recent successful sub-total gastrectomy for gastric ulcer which simulated cancer in the old age group is presented.

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+ Editorial +

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Millions Wasted on Colds

Outmoded self-treatment methods and commercial advertising are largely responsible for the waste of millions of dollars annually by people with colds, grip and influenza, according to Hobart A. Reimann, M. D., of Philadelphia.

Writing in the November 2 issue of *The Journal of the American Medical Association*, Dr. Reimann, of the Jefferson Medical College and Hospital, refers to many of the preventive and therapeutic measures in common use as "obsolete" and "illogical." He especially condemns the waste of the sulfonamide compounds and such antibiotics as penicillin which are ineffective for these viral infections.

Respiratory diseases are widely prevalent and "account for most of the home visits (32 per cent) and provide the second most common reason (15 per cent) for office visits to general practitioners," states the author. "The average person is said to suffer from one to four bouts each year, accounting for about 250,000,000 infections annually in the United States. Infections of the respiratory tract cause more loss of time from industry and from schools than all other diseases combined. They are rarely a direct cause of death, but they precede or incite many other serious infections (such as pneumonia or meningitis)."

Except for influenza vaccine there are no specific preventive procedures, and no specific treatment exists for any infection of the group. The most that can be done for the patient is to relieve discomfort, to prevent complications without impeding the natural process of recovery and to minimize the spread of infection to others.

If aching and headache are present they are best controlled by warmth, rest in bed and the use of an analgesic. There is no need to change from the normal diet and fluid intake in the average infection. Rest, as for any other infectious condition, is the best treatment for it serves several purposes: (a) aids recuperation, (b) lessens complications, (c) prevents the spread of the disease to others and (d) keeps the patient from acquiring a more serious infection from contact with "carriers."

Good health alone is no insurance against colds. Dr. Reimann points out that "although excellent physical condition, peace of mind, adequate diet and pleasant weather supposedly furnish resistance, infections of the respiratory tract occur for no obvious reason in otherwise robust persons. However, certain circumstances known by common experience to lead to colds such as exposure to wet and cold, sudden chilling in drafts, volatile irritants, dust, fatigue and other excesses should be guarded against, or neutralized by rest, warmth and comfort. Reasonably comfortable, temperature and humidity of air in rooms is desirable, but no evidence is available as yet of their specific value. Residence in a climate where colds are less frequent is recommended for those who are subject to frequent infections, if economic circumstances permit."

MISCELLANEOUS

STREPTOMYCIN

Definition

Streptomycin is an antibiotic substance produced by certain strains of *Streptomyces griseus* (K) W. H.

Position of Streptomyces in the Vegetable Kingdom

Division—Thallophyta
Sub-division—Fungi
Class—Schizomycetes
Order—Actinomycetales
Genus—Streptomyces
Species—Streptomyces griseus (Krainsky) Waksman and Henrici

Definition of the Unit

Originally a unit of streptomycin, or an S. unit was defined as that amount of material which, when present in 1 ml. of a nutrient medium, would just inhibit the growth of a given strain of *Escherichia coli.* The new standard is as follows: *One unit of streptomycin is equivalent to one microgram (gamma) of pure streptomycin base.*

Streptomycin is generally standardized against either *Escherichia coli, Bacillus subtilis* or a special strain of *Staphylococcus aureus.*

Production

It is produced by the deep submerged-culture type of fermentation, similar to that used in the production of penicillin.

Properties

Streptomycin is a basic compound of low molecular weight. The hydrochloride and sulfate are extremely soluble in water. It is possible to dissolve 1,000,000 micrograms in one cubic centimeter of water. It is insoluble in common organic solvents. It is quite stable both chemically and biologically. Solid preparations have been stored in a refrigerator for periods of greater than six months without any loss of potency and sterile solutions maintain their potency up to three weeks at 37° C. Its antibacterial action is greatest at pH 8-9. Its activity is influenced by the presence of various salts and is markedly reduced by glucose, phosphates, carbon dioxide, cevitamic acid and cysteine. The salts are extremely hygroscopic.

Methods of Administration

A. *Parenteral*

1. *Intravenous*—Continous drip is advocated, using a total daily dosage of 1,000,000 to 4,000,000 units. Half of the amount to be given is dissolved in one liter of normal saline solution and given at the rate of 25 drops per minute, a total of two liters being injected in a twenty-four hour period.

2. *Intramuscular*—Varying doses injected. Generally 100,000 or more units every three or four hours. Total daily dosage by this method—1,000,000 to 2,000,000 units.

3. *Subcutaneous* — Injection of 100,000 units per cc. of normal saline at three or four hour intervals. Total daily dosage—1,000,000 to 2,000,000 units.

4. *Intrathecal*—100,000 units in 5 or 10 cc. of normal saline injected directly into the spinal canal. This dose may be repeated at twenty-four or forty-eight hour intervals.

B. *Nebulization* — Up to 500,000 units daily in concentrations of 25,000 or 50,000 units per cc. of normal saline. Administered by means of a glass nebulizer.

C. *Oral*—500,000 to several million units daily in four divided doses. When taken by this method there is little or no absorption from the gastrointestinal tract. It is not destroyed by the acidity of the stomach, however.

Antibiotic Spectrum In Vitro

In vitro results indicate that streptomycin is active against the following organisms:

Gram Negative

Eberthella typhosa
Echerichia coli
Brucella melitensis
Aerobacter aerogenes
Hemophilus influenzae
Hemophilus pertussis
Klebsiella pneumoniae
Pasleurella pestis
Pasteurella tularensis
Proteus vulgaris
Pseudomonas aeruginosa
Salmonella paradysenteriae and Salmonella schotmuelleri

Gram Positive

Mycobacterium tuberculosis var. hominis

Bacillus subtilis

Staphylococcus aureus

Majority gram negative.

Possible Uses

It should be remembered that clinical results do not necessarily parallel *in vitro* success or activity in experimental animals.

It is *possible* that streptomycin will be of value in the following:

1. Combined with Promin in the treatment of tuberculosis.
2. Pre-operative use as an "intestinal cleaner" in place of the sulfa drugs.
3. In some types of colitis.
4. In treating wound conditions or infections due to common gram-negative organisms.
5. In various infections due to *Klebsiella pneumoniae.*
6. In the treatment of *Salmonella* infections.
7. In the treatment of various urinary tract infections due to gram-negative organisms.
8. In the treatment of typhoid fever.
9. In the treatment of tularemia.
10. In the treatment of influenzal meningitis.

Present Status of Supplies

About 30,000 Gms. per month being produced.

37% available to Civilian Production Administration to civilian clinical research under Dr. Chester Keefer of the National Research Council. Remaining 63% is allocated to the Army, Navy, U. S. Public Health Service and Veterans' Administration.

Patchwork, October, 1946.

Allergy

The American Academy of Allergy will hold its annual convention at Hotel Pennsylvania, New York City, November 25-27 inclusive. All physicians interested in allergic problems are cordially invited to attend the sessions as guests of the Academy without payment of registration fee. The program has been arranged to cover a wide variety of conditions where allergic factors may be important. Papers will be presented dealing with the latest methods of diagnosis and treatment as well as the results of investigation and research. Advance copies of the program may be obtained by writing to the Chairman on Arrangements, Dr. Horace S. Baldwin, 136 East 64th Street, New York City, prior to November 10th.

Penicillin May Cause Nerve Injury

Two Navy doctors suggests that penicillin may cause injury to the nerves running to the surface of the body with resultant loss of sensation and muscular power, according to the October 12 issue of *The Journal of the American Medical Association.*

Comdr. Lawrence C. Kolb, (MC), U.S.N.R., and Lieut. Comdr. Seymour J. Gray, (MC), U.S.N.R., state that they observed this muscular weakness in seven patients treated with penicillin injections into the muscles at the U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md.

The nerve injury observed in all the cases occurred from 10 to 21 days after the initial injection of penicillin. The number of penicillin injections into the muscles given prior to these symptoms varied from 10 to 72.

The authors point out that complete recovery from the neuritis occurred within four months in five of the seven patients.

Delaware Academy of Medicine

Due to the request of several members, the Library of the Delaware Academy of Medicine, will be open on Wednesday evenings, from 7:00 to 9:00 o'clock, beginning as of November 6, for a four month trial period.

The Library as of this date, will be closed on Saturdays.

We hope you will make your visits frequent, on Wednesday evenings.

Sincerely yours,

The Delaware Academy of Medicine, Inc.

Frank Hoopes, Chairman,
Library Committee.

Infection with tuberculosis may be compared to the action of an incendiary bomb. It may come to rest in any isolated area of the body, generally first in the upper respiratory passages, and then may quickly be dispersed to other areas, like the bomb fragments causing incendiary fires.

The germ of tuberculosis may reproduce rapidly and set up secondary zones of inflammation and disease. Treatment is essentially like the suppression of the bomb. Nature assists in the process in trying to wall off the germ and build up a wall around it which isolates from oxygen and other food nutriments brought to it by the blood stream. Putting out the fire of tuberculosis demands early finding of the infection and a mustering of all body forces of resistance to put out the fire in the same manner as the community would deal with an incendiary bomb.—*Health and Safety Medium*, Feb., 1946.

Tuberculosis has become a serious problem to the health authorities in every country where war means greatly lowered living standards, extreme overwork, and a governmentally regulated diet which has not yet proven adequate when rationing becomes severe. In England and Germany, two countries in which tuberculosis authorities were questioned, the war presented the ideal set of conditions optimum for the incubation and transmission of pulmonary tuberculosis. There now appears sufficient evidence to warrant the conclusion that this new type of warfare—namely the bombing of city areas for strategic purposes—compounds the problem of tuberculosis in wartime.—George A. Wulp, M. D. The Effect of Bombing on Health and Medical Care in Germany, October, 1945.

To prevent errors in diagnosis, it should be a routine practice not to make a diagnosis of pneumonia, bronchitis, asthma, pleurisy, chest cold, catarrhal fever or grippe without first considering the possibility of tuberculosis. The symptoms and physical findings in these cases may be the same as those encountered in tuberculosis. To determine definitely the presence of tuberculosis an X-ray and sputum examination and occasionally a tuberculin test are requisite for all these patients. This would not be an impractical or uneconomical procedure, for the yield of active cases of tuberculosis would be considerable.—I. D. Bobrowitz, M. D., and Ralph E. Dwork, M. D., *N. E. Jour. Med.*, Jan 11, 1946.

BOOK REVIEWS

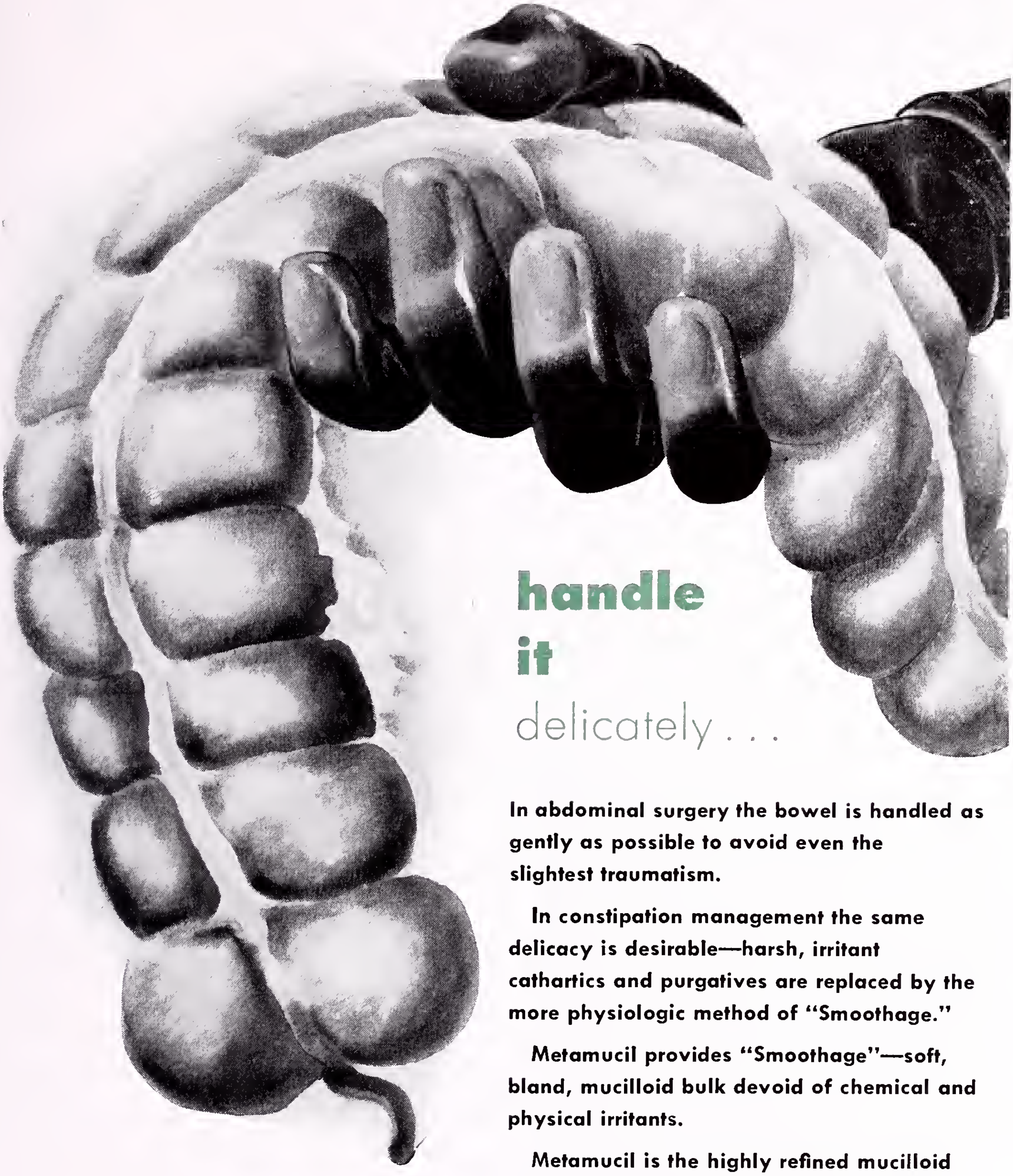
Diabetes—A Concise Presentation. By Henry J. John, M. D. Pp. 300, with 73 charts. Cloth. Price, $3.25. St. Louis: C. V. Mosby Company, 1946.

This is a very good treatise on the subject. The author, through the medium of many individual case discussions, gives a thorough coverage of the subject. The full discussion of the limitations of blood sugars is very enlightening on a subject greatly misunderstood by the vast majority of physicians. The dogmatic manner of presentation stimulates one's interest in the book. Though the reviewer does not agree—as who does on diabetes?—with many of the statements made in the book, he finds that the book covers the subject better than some of the post-graduate courses on diabetes which he had attended. The absence of any reference to a routine urine acetone test in diabetics is the only serious fault found in the book—of course this might be a matter of opinion.

The reviewer specially recommends this book to the physician of the pre-insulin day, especially the PZI days.

A Primer for Diabetic Patients: An Outline of Treatment for Diabetes With Diet, Insulin and Protamine-Zinc Insulin, including Directions and Charts for the Use of Physicians in Planning Diet Prescriptions. By Russell M. Wilder, M. D., Professor and Chief of the Department of Medicine of the Mayo Foundation, University of Minnesota: Senior Consultant in Division of Medicine, Mayo Clinic. Eighth Edition, Reset. Pp. 192, with 8 illustrations. Cloth. Price, $1.75. Philadelphia: W. B. Saunders Company, 1946.

This is a very well written primer for the diabetic patient. The "Questions" following each chapter draw the patient's attention to the important parts of the preceding chapter. The chapters covering the treatment by insulin, diet, and substitution for foods, not only are of prime importance to a diabetic patient but are also useful to the physician.



handle it delicately . . .

In abdominal surgery the bowel is handled as gently as possible to avoid even the slightest traumatism.

In constipation management the same delicacy is desirable—harsh, irritant cathartics and purgatives are replaced by the more physiologic method of "Smoothage."

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Cheese, American
Cheese, Swiss
Cherry
Chicken
Clam, Hard
Cocoa
Cocoanut
Codfish
Coffee
Corn
Crab
Cucumber
Duck
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Eggyolk
Flounder
Gelatin
Ginger
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Lobster
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Oat
Onion
Orange
Oyster
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Peanut
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Pepper (Red, Green)
Perch
Pike
Pineapple
Pork
Potato
Prune (Plum)
Pumpkin
Quince Seed
Radish
Rice
Rye
Salmon
Sardine
Scallop
Shrimp
Soy Bean
Spinach
Strawberry
Sweet Potato
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Tuna Fish
Veal
Walnut (English)
Wheat
Whitefish (Lake)
Yeast

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Cattle Hair
Dog Hair
Goat Hair
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Hog Hair
Horse Dander
Rabbit Hair
Sheep Wool

FUNGUS ALLERGENS

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Aspergillus fumigatus
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Epidermophyton inguinale
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Monilia sitophila
Mucor plumbeus
Penicillium digitatum
Trichophyton interdigitale

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**N. Y. State Journ. Med. 35 No. 11,590*
Laryngoscope 1935, XLV, No. 2, 149-154

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persistent depression in

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As a result of special processes of purification and crystallization, all Penicillin-C.S.C. is now supplied in the form of the highly purified, heat-stable Crystalline Sodium Salt of Penicillin-C.S.C.

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In the crystalline state Penicillin Sodium-C.S.C. is so pure that it can be administered subcutaneously even in large doses with virtually no pain or danger of untoward reactions due to impurities.

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*CAUTION: Once in solution, however, penicillin still requires refrigeration.

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Because of its high potency per milligram, Crystalline Penicillin Sodium-C.S.C. exerts optimal therapeutic activity. A recent report shows the advantage of highly potent preparations.[1]

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The high state of purification achieved in Crystalline Penicillin Sodium-C.S.C. is indicated by *its high potency per milligram.* The number of units per milligram is stated on each vial, thus enabling the physician to know the degree of purification of the penicillin he is using.

[1] "The potency of the penicillin undoubtedly affected the results. The first 15 patients, all treated with the same batch of penicillin, were cured. The next 7 patients were treated with the same dosage of a different batch of penicillin. Five of these 7 were not cured. Assays of penicillin used for these 7 patients showed it to be of reduced potency." Trumper, M., and Thompson, G. J.: Prolonging the Effects of Penicillin by Chilling, J.A.M.A. *130:* 628 (March 9) 1946.

Crystalline Penicillin Sodium-C.S.C. is available in serum-type vials containing 100,000, 200,000, or 500,000 units.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Pharmacy and Chemistry

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A Carbohydrate Syrup for Supplementing Milk
FOR INFANT FEEDING
As Directed by Physician
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—spaced absorption, uniform composition
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Two tablespoons equal one fluid ounce.
120 calories per fluid ounce.
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CARTOSE supplies carefully balanced amounts of non-fermentable dextrins, with maltose and dextrose. These offer the advantages of: spaced absorption because of the time required for hydrolysis of the higher sugars ; less likelihood of distress due to the presence of excessive amounts of fermentable sugars in the intestinal tract at one time.

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Prior to the advent of insulin, excessive protein breakdown was a frequent occurrence in the uncontrolled diabetic patient. This protein waste manifested itself in the excretion of large amounts of nitrogen in the urine, a situation encountered even today when long standing diabetes mellitus is first detected in a patient.

The basis underlying this faulty protein metabolism is an increased conversion of protein to carbohydrate, derived from the glycogenic amino acids. Consequently, restriction of protein intake was justified, even at the expense of negative nitrogen balance.

Through the use of adequate amounts of insulin, protein breakdown for glycogenesis is largely preventable. Based on the modern concept of the vital role of protein in the body economy, the prescribed dietary initially provides at least 1.5 Gm. of protein per Kg. of body weight* to compensate for past negative nitrogen balance. After the first few weeks of treatment, the protein intake is dropped to not less than 70 Gm. daily.

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Among the protein foods of man, meat ranks high as a source of biologically adequate protein, capable of satisfying all protein needs. It provides generous amounts of B complex vitamins, and enhances the biologic quality of less complete proteins derived from other foods.

---

*Stare, F. J., and Thorn, G. W.: Protein Nutrition in Problems of Medical Interest, J. A. M. A. *127:*1120 (April 28) 1945.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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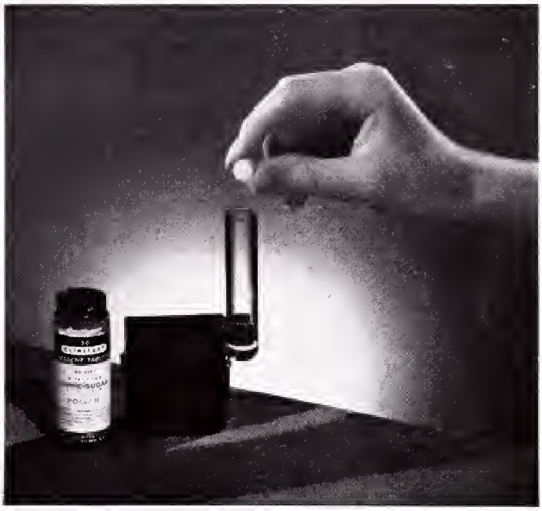

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(1) It carries on a continuous educational campaign throughout the State to interpret to its citizens the accomplishments and needs of the Delaware State Hospital, the Mental Hygiene Clinics, the Delaware Colony, and other Delaware institutions and agencies dealing with mental hygiene and emotional problems.

(2) By talks, discussion programs, newspaper and radio publicity, the Society strives to remove the stigma, in the minds of many people, connected with the problem of mental disease in their families, and urges early diagnosis and treatment.

(3) Organizes mental hygiene programs for educational, nursing, social work, Red Cross, religious groups, women's clubs and service clubs in Delaware.

(4) Is engaged in a five-year research and demonstration program to see if transferable techniques for use by teachers with school children can be discovered which will assist in raising the emotional maturity of the average graduate of the schools in this State.

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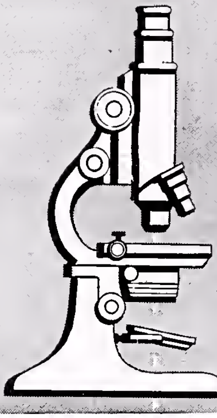

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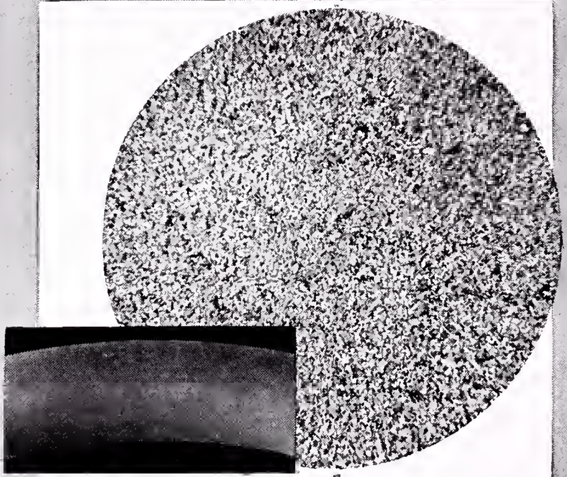

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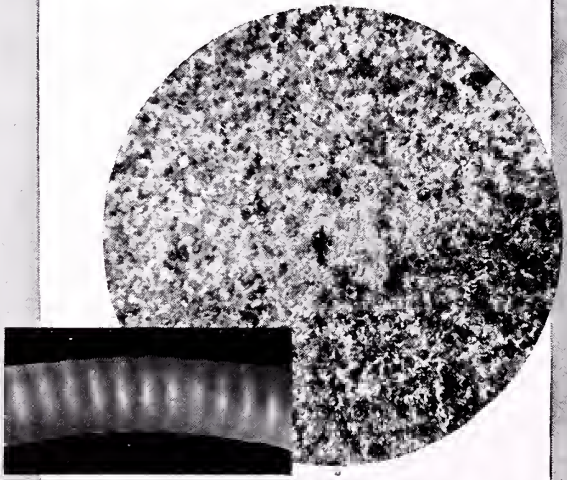

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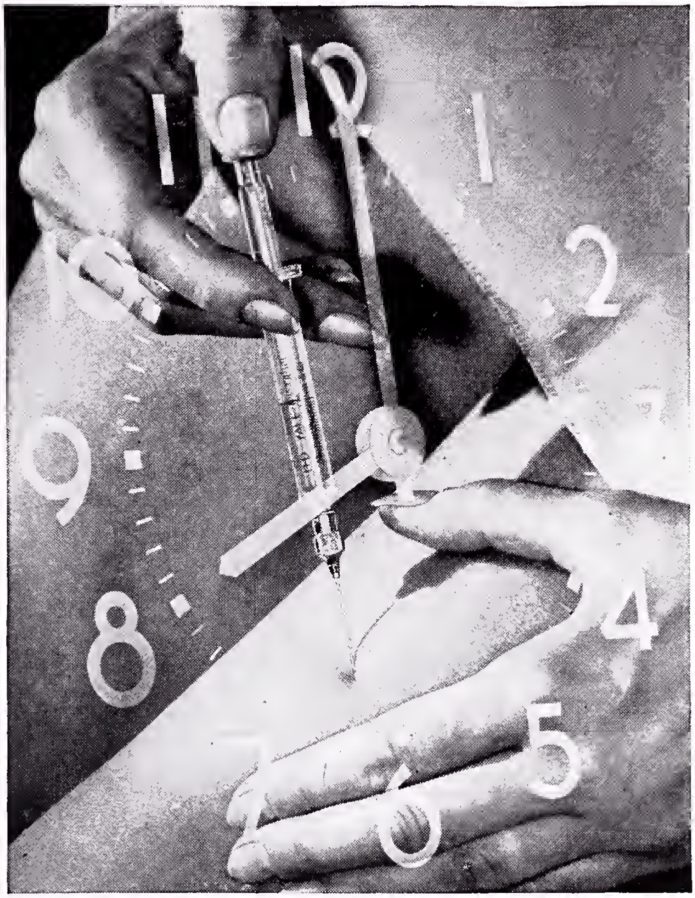

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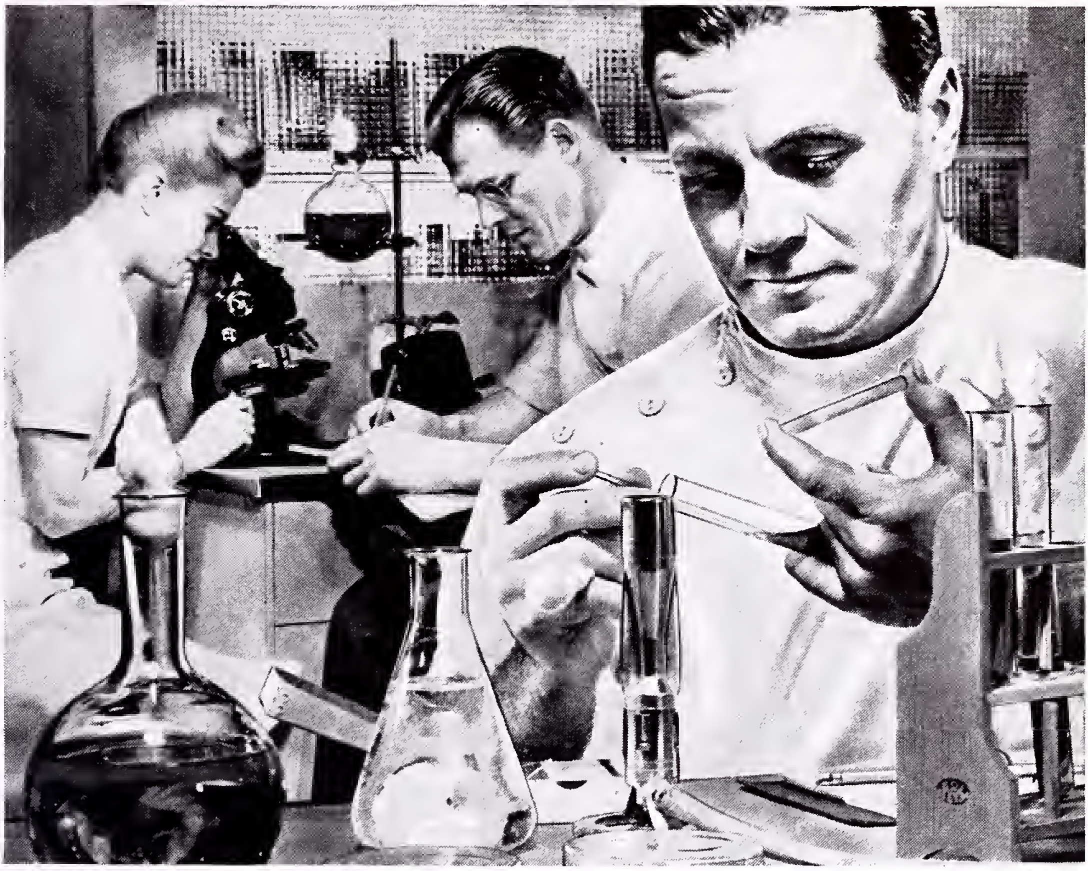

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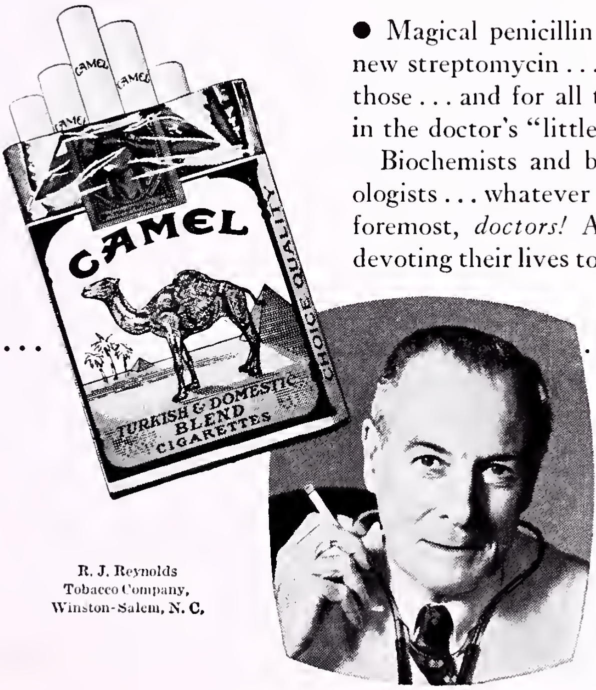

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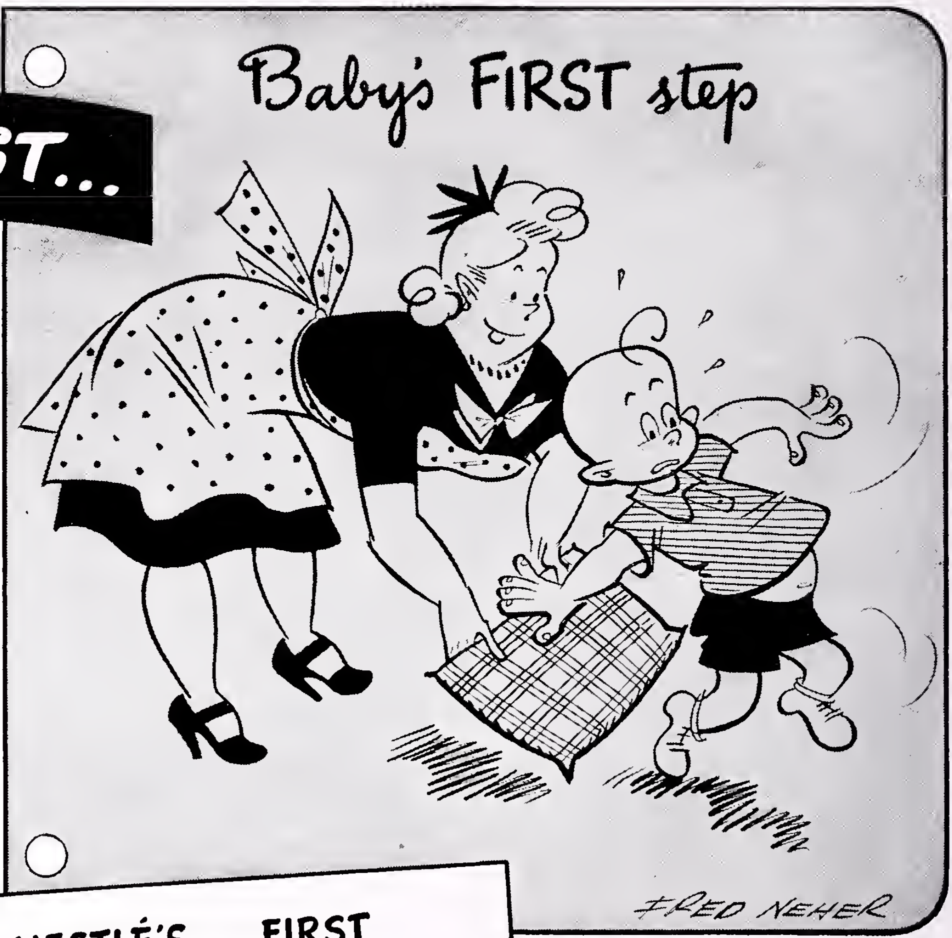

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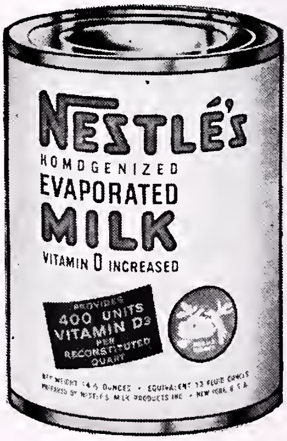

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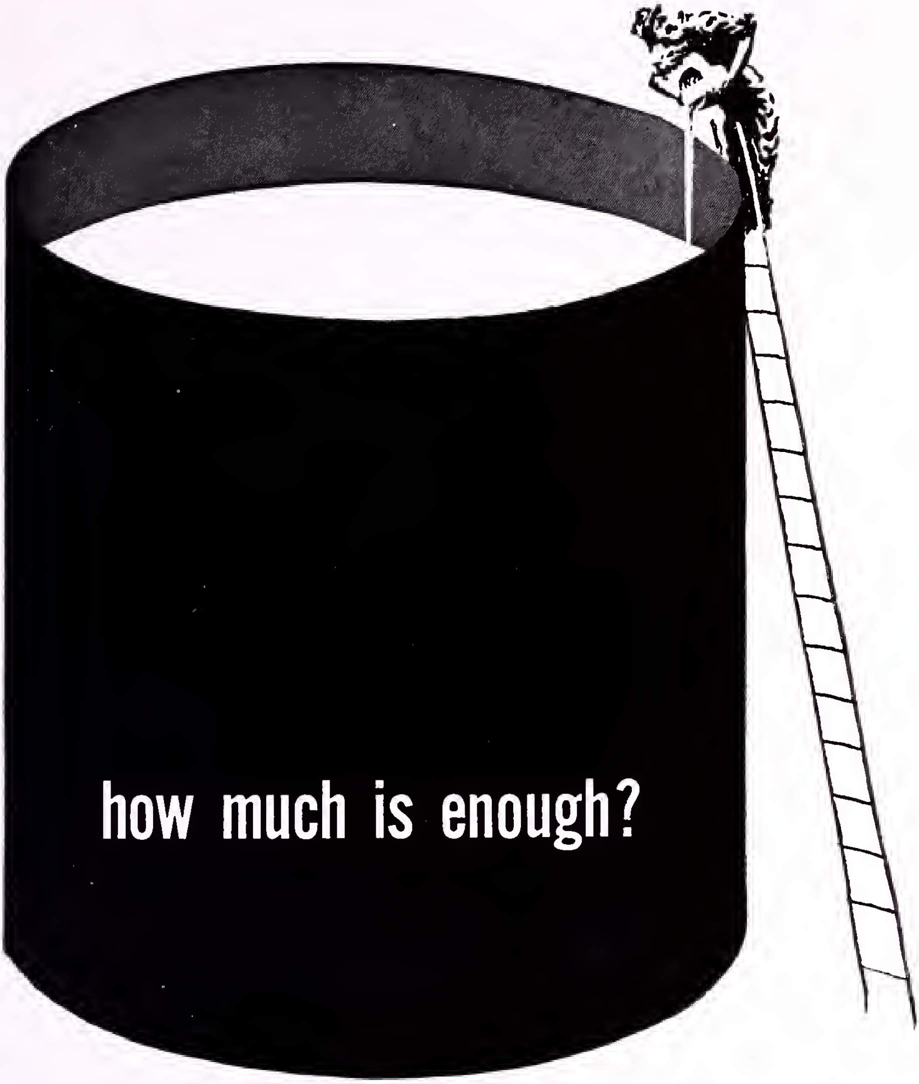
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References: 1. Dodd, K. and Minot, A. S.: *J. Pediat.*, 8:442, 1936.
2. Dodd, K. and Minot, A. S.: *J. Pediat.*, 8:452, 1936.
3. Sahyun, M.: *Am. J. Dig. Dis.*, 13:59, 1946.

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Richards, R. K., and Perlstein, M. A. (1945), Tridione, a New Experimental Drug for the Treatment of Convulsive and Related Disorders, Proc. Chicaga Neurological Soc., Jan. 9; and (1946), Arch. Neurol. and Psychiatry, 55:164, February.

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Erickson, T. C., Mnsten, M. G., and Gilson, W. E. (1946), Observations on the Use of Tridione in the Treatment of Epilepsy, Presented before Amer. Neurological Soc., San Francisco, June.

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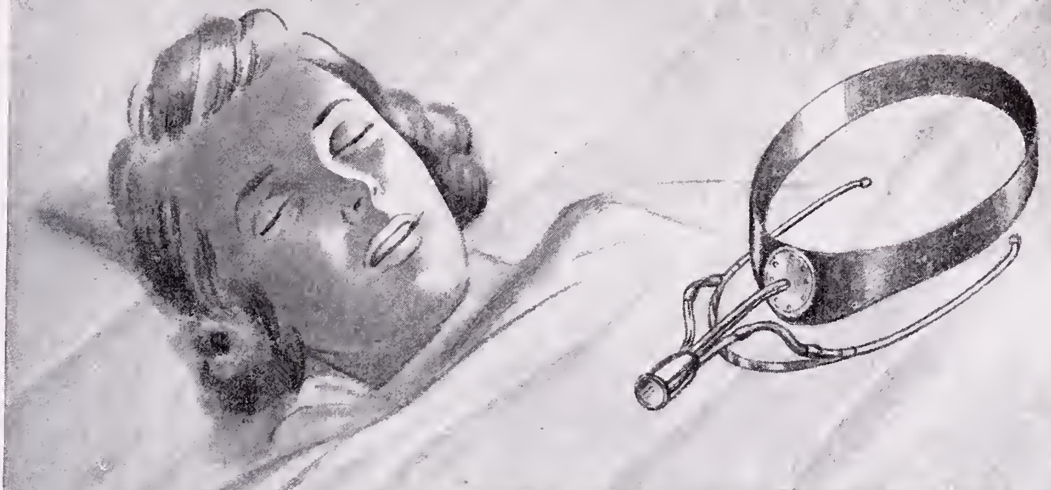

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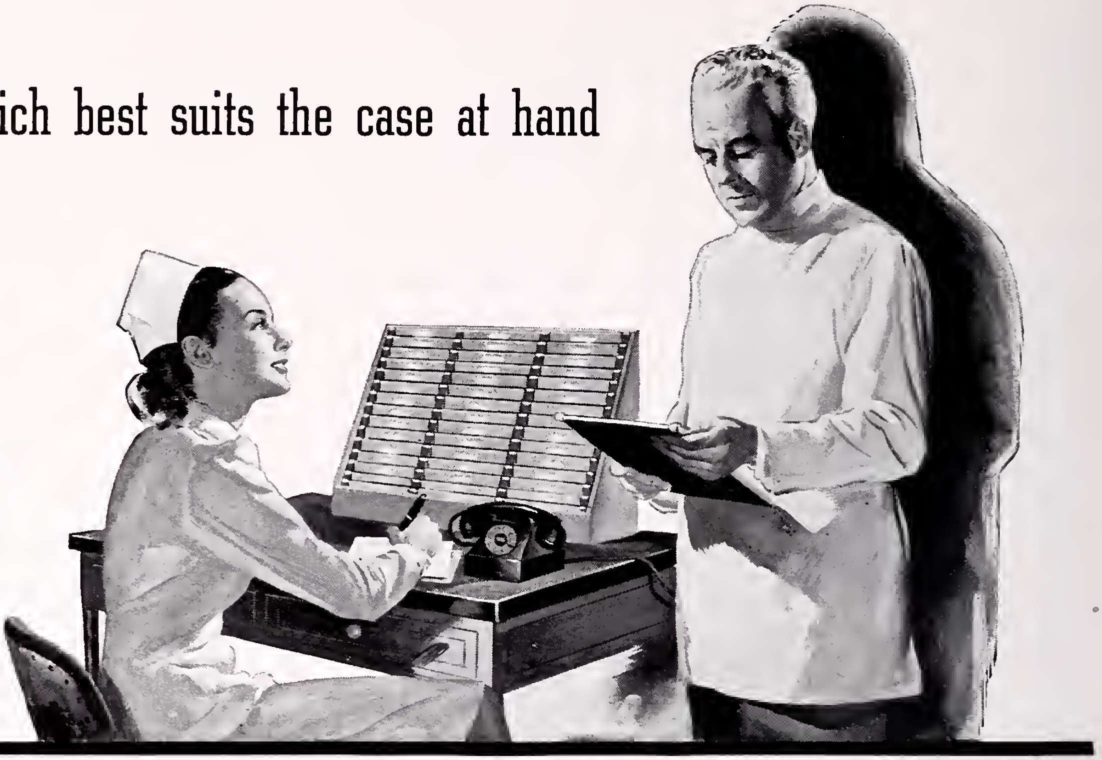

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ACUTE ANTERIOR POLIOMYELITIS*

John B. Baker, M. D.,
Milford, Del.

I appreciate the opportunity of presenting to you some of the factors concerning anterior poliomyelitis. I apologize, however, for the didactic nature of this paper.

Definition. Anterior poliomyelitis is an acute infectious disease of virus etiology, characterized by a febrile course with evidence of central nervous system involvement, particularly of the spinal cord, accompanied in a variable proportion of cases by development of flaccid paralysis of irregular distribution and extent.

History. Heine, a German orthopedist, published a description of infantile paralysis in 1840. In 1890, Medin, a Swedish worker published a paper establishing infantile paralysis as a definite pathological entity. Caverly, in 1894, recognized the occurrence of non-paralytic infantile paralysis. The communicability of the disease and the importance of non-paralytic cases as a factor in the spread of the infection were pointed out by Wickman in 1905.

Etiology. The etiological agent has been identified as one of the smallest viruses, about ten to fifteen milli-microns, similar in size to the virus of foot and mouth disease and of yellow fever.

Landsteiner and Popper, in 1909, first transmitted the disease to an animal, the rhesus monkey, by intraperitoneal injection or inoculation, with an emulsion of spinal cord taken from a nine-year-old child, who had succumbed on the fourth day of anterior poliomyelitis.

Recently investigation has shown a number of virus strains which differ little in their antigenic structure and thereby in their infectivity for different animals and also for man.

Intracerebral inoculations of monkeys produces poliomyelitis. Later, the virus was found in the nose of the monkey, presumably excreted there. It was found, also, that monkeys could be infected by placing the virus in the nares.

The disease in the monkey is very similar to that in man. No symptoms occur for five to twenty days, then fever develops for twenty to forty-eight hours, analogous to the preparalytic stage in the human. Tremors then precede development of paralysis. Paralysis follows which spreads rapidly and extensively. Unlike the human, the temperature falls before the paralysis attains its maximum extent. After three or four days, the animal weakens, and succumbs. However, with careful nursing the animal may recover, showing a gradual and partial return of function.

Certain strains of virus have been adapted to the cotton rat and to mice in order to further the study of this disease experimentally. The virus is relatively resistant to chemicals, withstanding weak solutions of phenol and high concentrations of ether. It is destroyed by oxidizing agents such as potassium permanganate and hydrogen peroxide. A temperature of 55° will kill the virus in a short time, as will ultraviolet light. Chlorination of drinking water, as ordinarily employed, is not sufficient to kill the virus. In stools, kept at ice box temperature over a long period of time, the virus remains active.

Epidemiology. Sporadic and mild cases occur in the tropics. The Scandinavian countries, the British Isles and the United States have suffered most heavily.

Epidemics occur in summer and autumn. July, August, September, and October are the months in which the disease is most prevalent in the above mentioned countries, whereas in Australia it occurs most often in the first four months of the year.

Insect vectors have been sought as a cause of spread of the disease. Flies have been shown to have carried the virus during epidemic periods. Biting insects and other vectors have not been shown to carry the virus.

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* Read at the Staff Meeting, Milford Memorial Hospital, November 6, 1946.

Infantile paralysis spreads by direct human contact. Cross infection occurs by contact, through the use of drinking cups or glasses. This has been conclusively demonstrated. As a result of experiment two schools of thought have arisen as to how the virus reaches the central nervous system—through the olfactory area[1], or through the gastro-intestinal area.[2]

Despite the seeming uncertainty concerning the portal of entry, there is no doubt that large amounts of virus are excreted through the intestinal wall into the stool.

Virus may be carried in the nose of the child for a month before contracting the disease. During the disease the virus is found chiefly in the nervous system of the patient but not in the blood, urine, sputum or spinal fluid.

There seems to be a higher incidence of the disease in rural areas than in cities. The cause of this has not been explained.

Poliomyelitis tends to spread along water courses.

Neutralizing antibodies in all types of people all over the world suggest subclinical or non-apparent cases throughout the world.

Genetic factors may be of great importance since the incidence[3] of paralytic forms seems greater in certain families in several generations.

Transplacental immunity seems to protect infants up to four or five months of age. After this, susceptibility increases up to two years, then drops until later in childhood.

The incubation period is from seven to ten days.

Pathology. The virus is neurotrophic and attacks ganglion cells and gray matter, particularly in the cervical and lumbar region. The characteristic change in the central nervous system is a lyphocytic cuffing or perivascular infiltration about the small vessels in areas of the anterior horn cells and internuncial cells. The anterior horn cell may degenerate. A meningitic reaction may be observed. In the brain, the motor cortex, vestibular and cerebellar area are involved. As the motor neuron degenerates, it is replaced by glial tissue. It no longer supports nutrition of the muscle, the peripheral nerve degenerates, the muscle atrophies, the bone of the infected limb may fail to grow and becomes shorter.

Symptoms. There are a wide variety of symptoms depending upon—virulence of the virus, the part of the nervous system attacked, the age of the patient.

Different clinicians and investigators divide poliomyelitis into a number of groups. Nelson[4] speaks of (1) the abortive type; (2) paralytic type; (3) respiratory type. McIntosh[5] classes it as (1) spinal type; (2) bulbospinal type; (3) non-paralytic or abortive type.[6] Ford named six types: (1) abortive; (2) non-paralytic or meningeal; (3) spinal; (4) brain stem; (5) cerebral; (6) ataxic or cerebellar. For the sake of brevity I shall follow the first grouping.

Preparalytic Stage. The abortive or preparalytic polio begins suddenly with fever, headache, malaise, sore throat and such G. I. symptoms as nausea, vomiting, diarrhea, or constipation. A stiff back and neck are usually present, but not invariably so. The temperature may be as high as 101° F. for two to three days, following which the symptoms subside. Lumbar puncture is indicated but may be deferred during the non-epidemic periods in order to allay undue anxiety in the family. The spinal fluid may show nothing or a slight increase in pressure and in lymphocytes (lymphocytes being below 100 per cu. mm.), and a slight increase in protein. The reflexes are normal usually, though maybe slightly decreased.

Paralytic Stage. This begins in the same manner as in the abortive case but has added variety and severity of symptoms which presage paralysis. The reflexes may be diminished or entirely absent. The neck is extremely stiff. The head drops back of the body when the shoulders are lifted. Meningitis signs may be so marked in some cases that the patient may show even opisthotonus. The temperature is higher, being 103° F., the factor which assists in separating it from severe respiratory or other infectious disease. Drowsiness to the point of coma is often present; pain and tenderness is often severe.

An early evidence of severity is the socalled "back sign," when the patient can sit up in bed only with hands thrown out far behind him for support. Urinary difficulty may show early in the paralytic form. Constipation is more frequent than diarrhea. The weakness in the muscles proceeds on to paralysis. The muscles most commonly involved are those of the lower extremity—the anterior tibial, the peroneal, and the quadriceps femoris. Paralysis of an arm and leg is more common than involvement of just one arm alone or both arms. In the arm the deltoid muscle is the one usually affected. Thus, there is demonstrated the predilection of the virus for the cervical and lumbar distribution.

As a rule the more stormy the onset the more likely is paralysis to follow. On lumbar puncture the spinal fluid shows a moderated increase in pressure, an increase in cell count to above 20, and polymorphonuclear cells are present early and later lymphocytes. The more cells the more severe the meningitis involvement and the less involvement of the anterior horn cells as a rule.

Respiratory Paralysis. Evidence of bulbar involvement may be overlooked in children, primarily, beause their breathing is abdominal. It may occur as a late complication of the spinal type, or as a termination of a progressive or Landry's paralysis.

The earliest evidence of bulbar involvement is a slight nasal twang to the voice, or a tendency to choke on liquids with regurgitation through the nose, with a weakness of the muscles of the glottis and diminution or loss of the palatal reflex. Thick saliva accumulates in the pharynx which is usually partially or completely paralyzed. There is weakness of the abdominal muscles which sometimes leads to ballooning of the abdomen. In the intercostal type of paralysis respirators are of immense value.

Diagnosis. Cases with only mild G. I. and respiratory signs with no paralysis often remain undiagnosed. Even abortive cases may be mistaken for lymphocytic chorio-meningitis or any one of the encephalitides. Encephalitis may be distinguished by complement fixation tests performed on blood serum.

Abortive cases should be suspected during epidemics, and if found should be treated as a case of poliomyelitis.

In the meningitic form, the polys may predominate in the spinal fluid but later the lymphocytes predominate. It may also be confused with T. B. meningitis, but the decrease in the blood chlorides and blood sugar, the positive tuberculin, the high spinal fluid proteins, and the presence of tubercle bacillus in the spinal fluid assist in the differential diagnosis.

The Guillan-Barre syndrome is a disease of unknown etiology. It is an acute neuronitis responsible for symmetrical paralysis, for sensory changes, a high spinal fluid protein without an increase in cells. These cases get well completely, with no residual paralysis. The pseudoparalysis of scurvy, lead poisoning, trichinosis, and sometimes rheumatic fever must also be differentiated from acute anterior poliomyelitis.

Prognosis. Predictions in regard to the course of the disease and prognosis of the individual case cannot be made with any degree of accuracy during the acute stage. However, we must consider several problems in this connection, especially the prognosis as to life, the probability of paralysis, and the probability of recovery from paralysis.

Certain patients with extensive paralysis recover, while others with less extensive paralysis do not. When paralysis occurs early it is more liable to be permanent and yet at times even this resolves.

Atrophy of the muscle occurs after several weeks of paralysis, those involved lose their ability to contract to faradic stimulation. Paralysis of the back muscles results in lordosis and if the involvement is unilateral scoliosis follows while flail arms and legs are apt to be associated with subluxation of the joints or other deformities of the hip and the shoulders.

Contractures of muscle tendons such as the achilles may occur. Muscles supplied by the anterior horn cells which have been completely devitalized remain degenerate and atrophic, and may never recover their function. If only partial destruction of an anterior horn cell occurs recovery of function is more probable.

Most of the deaths have been from bulbar paralysis. It is estimated that fully 50% of these cases fail to recover.

Prevention. During epidemics avoid crowds, over-activity and exhaustion, exposure to cold or polluted water. Eliminate flies as much as possible.

Do not do any tonsil and adenoid operations during epidemics. Human immune bodies or convalescent serum do not seem to be of any value as a prophylactic measure.

Treatment. (1) Isolate the case, as in typhoid fever. (2) Discharges from mouth and nose should be destroyed. (3) Face mask should be worn by persons in active contact with the patient. (4) Possibility of fecal contamination should not be forgotten. (5) Convalescent serum, once thought to be of value has been more or less discarded. (6) Nasal sprays have been used in prophylaxis, their value is questionable, and have been mostly discarded. (7) Active immunization with attenuated virus or inactivated virus have not proved successful.

Therapy during the acute stage is largely symptomatic. In abortive cases medical care should be aimed toward keeping the patient comfortable and at complete bed rest for at least one week after all signs and symptoms disappear. Many patients have had recurrence when permitted out of bed too early, resulting in paralysis and atrophy. The drugs commonly used are aspirin for pain, hyperesthesia for general discomfort; phenobarbital for restlessness; codeine or morphine for extreme pain. Purgatives are to be avoided, or used with marked discretion.

In the paralyzed patient the position of greatest comfort should be permitted while paying attention to weak muscles or muscle groups and protecting them. It is important to make a daily survey of muscle function. Much argument has arisen as to whether to use splints, hot packs, passive motion. When pain is severe in the affected muscles splinting helps, but hot packs also tend to reduce this discomfort. It is said by some that too little attention is paid to methods of detecting muscle weakness in muscle groups. In securing this information too frequent manipulation, stretching and contracting of the muscle against resistance should be avoided. Stokes does not splint in foot drop but places a board at the foot of the bed, vertical to the mattress with enough room between the mattress and the board for the point of the heel to fit.

Key[7] recommends, in a review of treatment by orthodox methods, the application of splints or casts, which are removed twice daily, the passive, not active, movement of all major joints through an arc of tolerance, pain being the brake. Splints are used only when needed and not in all cases. He uses salt baths, hot packs, or dry heat to induce vascular dilatation, and starts massage and training of muscles when tenderness disappears. Key also mentions variations of the orthodox method, such as underwater therapy, as at Warm Springs, or prolonged splinting as advocated by Kendall. Thus, while spasm of the muscle supplied by the involved anterior horn cell is an early and temporary manifestation of poliomyelitis, later contractural deformity may result if the proper physiotherapeutic measures are not used for their prevention.

In bulbar paralysis pharyngeal suction must be used constantly. Postural drainage also helps. Fluid and salt must be maintained if swallowing muscles are paralyzed. Mechanical respirators are used in intercostal paralysis and should be used in nuclear involvement.

Kenny Concept.[8] Sister Kenny[9] chooses words already in use to explain her ideas. The terms "muscle spasm," "incoordination," and "mental alienation" are the ones used to explain the symptoms. By "spasm" she feels these tight tender muscles are genuinely affected by the disease process, and that if left uncorrected the condition may become permanent and that it may produce "alienation" or flaccidity in opposing muscle groups. "Incoordination" means aimless contraction of muscles which cannot aid and may even actually impede the desired notion.

Treatment consists of hot packs, a hard board under the mattress, and a loose splint footboard or restraint. Packs are of flannel blankets containing at least 75% wool, and are applied, double thickness, well wrung out in hot water. Burns do not occur as the fuzzy nature of the blankets of wool prevents too close an application. The pack is covered with rubber or oiled silk. Next, a dry single layer of flannel is applied, then a single outer layer of dry cotton flannel or terry cloth. Packs are changed at various intervals according to the severity of the condition, beginning with ten or more packs a day. All packing is stopped for 12 hours at night. Salt tablets should be given to maintain blood chloride.

Tendon stimulation is begun as soon as it causes no pain. Gentle passive motion is used. With progress, the tendon tightens in the direction of normal pull, and when this occurs the patient is asked to help make the motion. Reeducation consists in telling and showing the patient how his muscle works.

The Kenny treatment produces a more comfortable patient; an absence of stiff joints at the end of quarantine, and it is useful in the examination of the patient as an aid to diagnosis.

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PROCEEDINGS: MEDICAL SOCIETY OF DELAWARE

TUESDAY MORNING SESSION

October 8, 1946

The One Hundred and Fifty-seventh Annual Session of the Medical Society of Delaware convened at nine-thirty o'clock at the Legislative Building, Dover, Delaware, Dr. Walter C. Deakyne, President of the Association, presiding.

President Deakyne: This is the opening session of the One Hundred and Fifty-seventh meeting of the Medical Society of Delaware.

We have with us this morning Reverend Paul A. Kellogg, Rector, Christ Church, Dover, who will deliver the Invocation.

. . . Reverend Kellogg then delivered the Invocation . . .

President Deakyne: Next we will have the address of welcome by Hon. J. Wallace Woodford, Mayor of Dover.

Mayor Woodford: Mr. President and ladies and gentlemen, I see you have followed the usual pattern. This address of welcome reminds me of the chap who was in a hospital facing an operation. He was a little worried about it and he finally asked the doctor, "Is this operation necessary?" The doctor said, "Yes, it is." "Do you think I will die?" "I am afraid you will." "Get me a preacher." "What do you want a preacher for?" "Well, if I am going to be opened I am going to be opened up with prayer." So I see you are following the usual pattern.

This is about the only time, being a Democrat, I get into this room; that is, to make addresses of welcome to different organizations. During the good many years that I have been Mayor of Dover I have had the opportunity to welcome the State Medical Society before and I want to assure you that the warmth and sincerity of my welcome is not dulled by its repetition.

I have been looking over this program this morning and trying to get something to talk about and can't even pronounce some of the words on it and can't get very much inspiration from that, nevertheless, I am happy to be here and welcome you in behalf of the city of Dover.

I know that I am looking into the faces of a very hardworking group. It is surprising to me that all during the war the Medical Society didn't unionize. Everybody seemed to join unions.

We realize the doctors all over the United States have done a wonderful job during the war. In the services they have taken the new medicines and achievements of science and applied them in a practical way. And the doctors who stayed at home also have made a shining record, and I am sure that you have the gratitude and appreciation of the citizens in general.

This is an age of organization. It is natural that people engaged in the same kind of work, same purposes and ideals, should gather in organizations. Sometimes we think this country of ours is over-organized because organizations have their drawbacks, but they have their advantages.

It seems to me that the drawbacks of organizations are that they tend toward mass thinking and mass action. You know there is a decided movement abroad in the land and all over the world to subordinate the individual and to hide him away in the mass, to press the individual into a mold of mediocrity. This movement is destructive and debasing rather than uplifting in its pattern and design. It works under the guise of equality, but it encourages an equality that makes no distinction between the educated and ignorant, efficient and incompetent, industrious and indolent. Certainly it is against the law of progress. It strangles individual initiative. It robs man of the dignity with which Christianity and democracy clothe him.

I think that medical associations and every other kind of organization made up of American citizens should combat this tendency in life of today.

Then I think organizations have their advantages, too, because through their individual members they can help to mold a healthy and sane public opinion. I don't know anything about the health of our communities. You know they say that a doctor is the one who suffers from good health in the community. I don't know very much about the health of our communities in this state or throughout the nation. I imagine physically it is all right, but I do know this country of ours, this world in which we are living, is sick. It is sick morally. I think we all realize that we are living in a state of moral bankruptcy. We have allowed moral standards to slip away from us.

We have forgotten the old-time virtues of truth, honor, and decency. Greed and selfishness seem to dominate some people. One strange failing of humankind is that they never seem to read the lessons of history aright. We realize, yet we do not observe it, that there are certain props that hold up and support society and these props are just as necessary in society as they are in this building, but we look all around for substitutes for these old-time virtues and invariably we end up in a mess. So it seems to me that, through our organization for building up a sane and wholesome public opinion, we should strive to get people back on the right road that leads to these old-time principles which are the props of society.

Then I think, without question, that this country of ours and people generally are sick from fear. We come to meetings of this kind with minds freighted with worries and cares. We don't know what is going to happen. We cannot see any light ahead. Some people are getting into a mood of defeatism. They just follow their hand serenely and await the bludgeoning of fate. We get this idea as we listen to the radio and see the scare headlines in the newspapers that there is opposition to everything, war is imminent, murder and crime, divorces, and probably down in the corner we will see a little script where it says, "The sun will rise in the morning."

As we read these papers and listen to the commentators over the radio we think the world is going to pieces and so we grow discouraged. The American people have never taken refuge in defeatism. Problems have always been challenging to them, so it seems to me that we, through our organizations, should encourage our members and encourage people in general to look at these problems in a challenging way. They challege us to be on the job and work at the trade of citizenship.

One of the reasons why our democracy is threatened today is because too many people sit upon the sidelines and shun the arena of action. We should look at these problems facing us and look at the future with high spirits and with a faith anchored in the belief that God rules and reigns in the affairs of men and that our destiny is luminous with divine approval. I am sure the doctors of this state believe in these things, and this Medical Society can do much in molding the public opinion of their communities along this line.

And so because of the great record you have made and the fine service you have rendered in combating disease and alleviating human suffering in your various communities amidst the clamor of war and the commonplace walks of peace, in behalf of the citizens of Dover I am very happy, indeed, to welcome you this morning, and I trust you will have a profitable session.

PRESIDENT DEAKYNE: I want to thank you gentlemen for being with us this morning and hope you remain with us throughout the session.

Next on our program we have "The Symptoms and Signs of Acute Poliomyelitis," by Dr. George J. Boines, of Wilmington.

. . . Dr. Boines presented his prepared paper, in conjunction with a film on poliomyelitis, which was discussed by Drs. L. L. Fitchett and I. M. Flinn.

PRESIDENT DEAKYNE: The next paper is "Medical Rehabilitation, The Doctor's Responsibility," presented by Dr. Alfred R. Shands, Jr., of Wilmington.

. . . Dr. Shands presented his paper, which was discussed by Drs. I. M. Flinn, David King, George J. Boines and W. O. LaMotte.

PRESIDENT DEAKYNE: Next we have the "Delaware Study of Child Health Services," presented by Dr. John McK. Mitchell, of Rosemont, Pa.

Dr. Mitchell then addressed the Society, the address being discussed by Drs. M. I. Handy, C. E. Wagner, and Stanley Worden.

PRESIDENT DEAKYNE: Before we recess for lunch, I would like to suggest that we all inspect the exhibits which are located throughout the building. The State Board of Health also has a mobile X-ray unit in front of the building, which is here for inspection. We will recess for lunch and reconvene at two o'clock.

. . . Thereupon the meeting recessed at one o'clock . . .

TUESDAY AFTERNOON SESSION

October 8, 1946

The meeting reconvened at 2:25 o'clock, President Deakyne presiding.

PRESIDENT DEAKYNE: The afternoon session will start with "The Problem of Deafness," presented by Dr. James Marvil, of Laurel.

. . . Dr. Marvil presented his paper, which was discussed by Drs. E. R. Mayerberg, W. M. Pierson, W. T. Reardon, and John McK. Mitchell.

PRESIDENT DEAKYNE: I wish to announce at this time that there will be a meeting of the American Cancer Society in this room immediately after the end of this session.

The next paper is "Thrombo-embolic Emergencies," by Dr. Thomas M. Durant, of Philadelphia.

. . . Dr. Durant then presented his paper, which was discussed by Drs. L. B. Flinn and Joseph M. Messick.

PRESIDENT DEAKYNE: Next we have the subject of "Clinical Use of Streptomycin," by Dr. Harrison F. Flippin, of Philadelphia.

. . . Dr. Flippin presented his paper, which was discussed by Drs. J. W. Lynch, J. F. Hynes and J. W. Howard.

PRESIDENT DEAKYNE: I certainly wish to thank Dr. Flippin for coming down after a couple of years and giving us a very excellent paper.

The next subject on the program is the "Diagnosis of Intra-ocular Tumors, Illustrated with Fundus Photographs in Kodachrome," by Dr. Arthur J. Bedell, of Albany.

. . . Dr. Bedell presented his paper, which was discussed by Drs. W. O. LaMotte, N. L. Cutler and J. M. Messick.

PRESIDENT DEAKYNE: It is getting late. We have decided to dispense with the next item on the program, which is the movies, and we will adjourn now for a recess and report to the hotel for the dinner.

. . . Thereupon the meeting adjourned at 5:30 o'clock . . .

WEDNESDAY MORNING SESSION

October 9, 1946

The General Session of the Medical Society of Delaware convened at 10:15 o'clock, President Deakyne presiding.

PRESIDENT DEAKYNE: The morning session will open with the report of the House of Delegates presented by Secretary Munson. (See Transactions, this issue of THE JOURNAL.)

PRESIDENT DEAKYNE: Next we will have a paper on "Uretero-Intestinal Anastomosis and Vesical Carcinoma," by Dr. Brice S. Vallet, of Wilmington.

. . . Dr. Vallet presented his paper. At the conclusion of the paper a film was shown demonstrating the operations mentioned in Dr. Vallet's paper, which was discussed by Drs. A. L. Heck and S. W. Rennie.

PRESIDENT DEAKYNE: Next on the program is "The Common Problems of the Medical Practitioner and the Specialist in the Diagnosis and Treatment of Gynecologic Disease," presented by Dr. Thaddeus L. Montgomery, of Philadelphia.

. . . Dr. Montgomery presented his paper, which was discussed by Drs. Mildred Forman and S. W. Rennie.

PRESIDENT DEAKYNE: Next we have "Continuous Spinal Anaesthesia in Thoracic and Abdominal Surgery," by Dr. William T. Lemmon, of Phildelphia.

. . . Dr. Lemmon presented his paper, which was discussed by Drs. Sanders and R. S. Heller.

PRESIDENT DEAKYNE: Next on the program is the address of the President.

. . . President Deakyne then made his Presidential Address, entitled: "Dissemination of Information to the Public on The Ideals of Medical Care. (See October issue of The Journal.)

President Deakyne: Next is the election of the President for 1947. Dr. Niles.

Dr. Niles: It befalls me to nominate the incoming President. Before his nomination I wish to express a few opinions that I have gathered during this convention, and one of them is this: I feel that the enthusiasm of our meetings has deteriorated in the last few years, perhaps it's the war. There was a time when this room would have been packed. After due consideration by the older members of the Society we have come to the conclusion that perhaps the older members are taking too active a part and not giving the younger men enough opportunities to function in this organization. I am in accord with the idea of interesting the younger men and increasing their activity in our organization.

And yet there is one thing that appeals to me very strongly, and that is the Presidency of the State Society. It is an honor; it is a compliment; it is the biggest compliment we can give any man, and I for one don't think that any young man should have the privilege of that office until he has served years of integrity, faithfulness, and loyalty. That office is a great compliment; it is something that every doctor in the state of Delaware cherishes and desires more than anything else that I know of. No matter who he is, down deep in his heart that honor is the greatest thing that can happen to him, and I feel that we should hold it in reverence and keep it for the man who has faithfully, over a period of many years, served the Society, whether he has been a headliner in the practice of medicine or whether he has been a mediocre country doctor. It must be preserved for that type of man, and as he comes up in turn, and if he lives long enough, we reward him with that greatest compliment and honor that we can bestow.

So, this afternoon it is a supreme pleasure for me to nominate a man who has faithfully, over a period of thirty years, served this Society. I don't think there is another man in the Society who has worked harder, or longer, who has contributed more, or who has been attending more regularly than the man I am going to nominate. I don't have to laud him; you all know him. We honor his knowledge, and I think he will make us one of the greatest Presidents we have ever had. So I take pleasure in nominating as President of the Medical Society of Delaware, Dr. William Edwin Bird, of Wilmington.

Dr. Neese: Mr. President, I will second Dr. Bird's nomination. Certainly no member of this Society has put more into the Society than has Dr. Bird. He has worked hard and long, and I am very happy to second the nomination.

Dr. Anderson: I agree.

Dr. MacCollum: I, too, as a member of the Kent County Medical Society, wish to second the nomination of Dr. Bird.

Dr. Barnes: I move that the nominations be closed and that the Secretary cast the ballot.

Dr. Neese: I second the motion.

President Deakyne: You have heard the nomination of Dr. Bird for President, and the motion that the nominations be closed and that the Secretary cast the ballot. All those in favor of these motions for Dr. Bird please stand. It is unanimous. I declare Dr. Bird elected President of the Medical Society of Delaware for the year 1947, by a unanimous vote.

Dr. Niles, will you and Dr. Neese escort Dr. Bird to the rostrum?

President-Elect Bird: Mr. President, members, and friends: As Dr. Niles has said, election to the Presidency of the Medical Society of Delaware is the acme, the pinnacle of any man's professional career who lives and practices in the state of Delaware. It is an honor I very deeply appreciate. I realize also that the honor carries with it a heavy responsibility. I pledge you that I shall do my utmost to fulfill the office and to meet those responsibilities in a manner that you may find fully to your liking.

Again let me say: I thank you.

President Deakyne: I will entertain a motion to adjourn the meeting.

Dr. MacCollum: Mr. President, I move the Annual Meeting of the Medical Society of Delaware adjourn sine die.

Dr. Barnes: I second the motion.

President Deakyne: The meeting is adjourned.

. . . Thereupon the meeting adjourned at 12:15 o'clock p. m. . . .

TRANSACTIONS: HOUSE OF DELEGATES

October 8, 1946

The meeting of the House of Delegates of the Medical Society of Delaware convened in the Legislative Chamber, Legislative Building, Dover, Delaware, October 8, 1946, at 9:00 o'clock, p. m., Dr. Walter C. Deakyne, President, presiding.

President Deakyne: The meeting of the House of Delegates will come to order.

I will appoint Dr. Lattomus to act as Secretary, pro tem, until Dr. Munson returns. We will have the roll call by the Secretary.

. . . Thereupon Dr. Lattomus called the roll, and a quorum was declared present.

Dr. Lattomus: Mr. President, I do not have the minutes of the last meeting so we will have to dispense with that.

Dr. James Beebe: As the minutes have been printed in The Journal, I move the reading be dispensed with.

Dr. G. W. K. Forrest: I second the motion.

President Deakyne: All those in favor of the motion signify by saying, "Aye." Opposed? The motion is carried.

Next on the program are the reports of officers. I will read my report at this time.

. . . Thereupon President Deakyne read his report as follows:

Report of the President

One of the most significant things which has happened since our last annual meeting in Wilmington is the return to private practice of almost all of our members who served in the Armed Forces. Their return means a strengthening of our Society. Many are already participating in the work of our various committees. In addition we have many new men throughout the state who have indicated their desire to take part in our Medical Society affairs on both a county and state basis.

During the past year our attention has been centered chiefly on the efforts being made in Congress to secure passage of legislation looking toward the complete socialization of medicine, and our entire aim has been to counter by every possible means this establishment of state medicine in our country.

Specifically, we have cooperated in every way with the National Physicians Committee and the American Medical Association and through its established committees to prevent passage of the Wagner-Murray-Dingell Bill, which, as you know, was called for hearings held by the Labor Committee in Congress during the past several months. We have won the preliminary battle, but this victory must not lull us into a false feeling of security. This bill will certainly be reconsidered when Congress reconvenes in January 1947. We must, therefore, redouble our efforts in order to be victorious.

We also had the National Health Bill introduced by Senator Robert A. Taft, which still remains in the hands of the Senate Committee on Education and Labor. This bill, as analyzed by many physicians, was considered a good alternative to the Wagner-Murray-Dingell Bill even though it contains many flaws.

An invaluable source of information concerning national affairs as they affect our profession has been the News Letters published monthly and sent to us by the Council on Medical Service and Public Relations of the A. M. A.

In reference to the accrediting of the Curative Workshop, Inc., of Delaware, a committee under the chairmanship of Dr. Irvine M. Flinn was appointed to survey the work being done by this organization. Upon the receipt of a very favorable report from this committee and upon request of the Curative Workshop, Inc., of Delaware, an advisory committee of nine physicians was appointed.

On July 7, 1946, Dr. Munson and I met with Dr. Jacques of the Philadelphia office of the Veterans Bureau to discuss with him the advisability of establishing definite fee schedules for the treatment of veterans outside of the hospitals, and arrived at the conclusion that this question, after presentation to the House of Delegates at its annual meeting in October, should in turn be considered and acted upon by each of the county societies.

Our state and county-endorsed Blue Cross Plan is progressing according to plan and I believe is very satisfactory to the majority of physicians throughout our state.

During the past year our State Legislature has not been in session. Consequently there has been nothing to do in respect to Delaware legislation except consideration by our Legislative Committee of the matter of a Delaware Premarital Law. I feel sure that this committee has made an adequate study of the subject and will be ready with recommendations for a suitable bill. I also suggest we continue our past policy toward our Legislative Committee so they will have a free hand in combating dangerous legislation which may appear during the coming session of our State Legislature.

Our Society met once during the year. The meeting held in the Academy of Medicine in Wilmington on April 2, 1946 was devoted mainly to an address by Dr. F. F. Borzell of Philadelphia, who explained the provisions of the Murray-Wagner-Dingell Bill and aided in formulating methods of opposition to this bill.

Since an amendment to the By-Laws looking toward the creation of a new position, namely, that of Executive Secretary, will be considered at this meeting, I trust that the Budget Committee will have carefully considered the urgent necessity of an increase in dues sufficient to pay the salary of an Executive Secretary and to provide funds in addition for Public Relations work.

Good work in Public Relations is extremely difficult without adequate training. Yet, I firmly believe that the manner in which we develop our Public Relations will in a large measure determine whether we can decisively defeat for all time the menacing forms of state medicine, which is to say, political medicine.

The next several years are going to be critical ones. Without the expert aid of a trained Public Relations Officer to direct our endeavors we may lose the sympathetic, intelligent support of our people. If we do lose public support in our fight against socialized medicine, political medicine will step in. Therefore, I suggest the employment of an Executive Secretary who has had experience in Public Relations. If this proves impossible, then I wish to suggest the employment of a Public Relations Officer in addition to the Executive Secretary.

Among other recommendations, I suggest that a survey be made to determine the medical needs of Delaware families and to determine their ability to pay for these needs, the resulting records to be made available to the respective county societies.

Now that members of our county societies have returned from service, I wish most strongly to suggest that the societies should observe more rigidly the rules of regular meetings, and that a closer relationship be maintained between each of these societies and our State Society. As a means to that end, I further recommend that at certain specified times during the year our House of Delegates meet with each county society in turn. Such meetings would be invaluable in settling certain problems we have in common.

I am happy to report that the budget for the Examining Board, which has been limited to $750.00 for all branches of medicine, will be increased to the sum of $1,600.00, effective June 1947. I congratulate the President-Secretary of the Examining Board, Dr. Joseph S. McDaniel, for the excellent record of the Board to date. Handicapped by an inadequate budget, the Board nevertheless has achieved its aims. It is of perticular interest that the records of Delaware physicians since 1895 to date are now in complete order and filed in the State Archives for permanent safe-keeping.

I am happy to say that my term as your President has been made pleasant by the help which you all have so freely given me. I wish particularly to thank Dr. C. L. Munson, our Secretary, for his excellent work and untiring efforts, the members of the various committees for their loyal support, and the Ladies' Auxiliary, under the able leadership of Mrs. Edwin L. Stambaugh, for its splendid cooperation.

The honor of having been your President is an honor I shall always treasure, and in closing I express again my deep appreciation to all of you.

Respectfully submitted,
W. C. Deakyne, *President*.

Dr. James Beebe: I move the President's report be accepted.

Dr. J. D. Niles: I second the motion.

President Deakyne: All in favor of the motion signify by saying, "Aye." Opposed? The motion is carried.

Next on the report of officers is the Secretary's Report.

. . . Thereupon Secretary Munson read his report, as follows:

Report of the Secretary

The office of the Secretary has been concerned primarily with the arrangement of the program and other details of the state convention, and taking care of such correspondence from the American Medical Association and other associations as seemed important. The Secretary has also tried to bring up to date the membership list which had previously been sent to Chicago and from which fellowship in the American Medical Association is determined.

It is the feeling of the present Secretary that this office cannot function properly in the interests of all of our members if the present state of affairs exists. I do not feel that the interest which the members of this Society show in our ordinary routine business and in our special meetings warrants the time that some ten or fifteen men who are interested devote to the Society. I heartily suggest to you that more cooperation would be a great help in conducting this office and would make the job of the new Secretary much more agreeable and pleasant.

Respectfully submitted,
C. L. Munson, *Secretary*

Then followed an off-the-record discussion of the Secretary's report.

Dr. Neese: I move that the Secretary give his report at the General Meeting tomorrow, and that we delete from our minutes this discussion.

President Deakyne: You have heard Dr. Neese's motion. All those in favor of the motion stand. Eleven. All those opposed stand. Nine. The motion is carried.

Next is the acceptance of the Secretary's report.

Dr. Tarumianz: I move the Secretary's report be accepted.

Dr. Hynes: I second the motion.

President Deakyne: It has been moved and seconded that the Secretary's report be accepted. All those in favor signify by saying, "Aye." Opposed? The motion is carried.

Next in the order of business is the report of the Treasurer.

. . . Thereupon the Treasurer's report was read as follows:

Report of the Treasurer
September 20, 1946

GENERAL FUND

Aug. 30, 1945, Balance on hand			$1509.23
	Receipts		
Oct. 11	Registration fee State Meeting	$590.00	
Jan. 10	Farmers' Bank of Delaware	52.50	
Mar. 15	Sussex County Med. Society	198.00	
Mar. 30	Kent County Med. Society	138.00	
May 8	New Castle County Med. Society	996.00	
May 21	Kent County Med. Society	6.00	
Dec. 31	New Castle County Med. Society	39.00	
July 9	Farmer's Bank of Delaware	52.50	
		$2072.00	2072.00
			$3581.23
	Expenditures		
Oct. 17	James W. G. Norton	$152.77	
Oct. 17	The Star Pub. Co.	83.75	
Oct. 17	Hotel Du Pont	271.75	
Oct. 17	J. Elmer Betty & Sons	10.00	
Oct. 17	James E. Gheen	133.48	
Oct. 31	C. C. Neese (Shrine Club)	204.25	
Oct. 31	Virgil Varallo, Transscribing	240.50	
Dec. 18	Eunice Wood, Sec. work for Dr. Speer	150.00	
Mar. 14	James Beebe, M. D., Delegate A. M. A.	114.00	
Mar. 14	The Star Pub. Co.	59.25	
Mar. 30	C. L. Munson, M. D., Sec't supplies, etc.	41.80	
May 8	The Cedar Tree Press	4.50	
May 8	W. A. Larmore, Hauling	6.18	
Aug. 5	C. C. Neese, M. D., Supps.	16.40	
Aug. 5	Diamond Ice & Coal Co.	.60	
Aug. 5	Natural Food Center	55.00	
Aug. 5	Delaware State Med. Journal	460.00	
Aug. 26	James Beebe, M. D., Convention Exp.	150.00	
Aug. 26	C. L. Munson, M. D., Sec't $100.00, Stap. $9.00	109.00	
		$2263.15	2263.15
Bal. in Checking Acc't Sept. 20, 1946			$1318.08

DEFENSE FUND

Balance August 30, 1945	3487.04
Interest Dec. 31, 1945	104.61
	3591.65

INVESTMENTS

Three (3) $1000.00 Series F War Bonds Issued May 1936, Value as of August 30, 1945	2237.00
Seven (7) Shares Farmer's Bank of State of Delaware Value $430.00	3010.00
	5247.00

Respectfully submitted,
W. W. Lattomus, *Treasurer*

Dr. Forrest: I move the Treasurer's Report be accepted, upon favorable audit.

Dr. Tarumianz: I second the motion.

President Deakyne: All those in favor of the motion signify by saying, "Aye." Opposed? The motion as stated by Dr. Forrest is carried.

Next is the report of the Council.

Report of the Council

Secretary Munson: As far as I know, they have no report.

President Deakyne: There has been no report made for the Council.

Dr. Prickett: The chairman of the Council is Dr. Waples. Doctor Waples is not present so the next person in line is Dr. Niles.

President Deakyne: Have you a report for the Council? Dr. Waples is absent.

Dr. Niles: I think that Dr. Prickett should make that report, but if he is hesitant, I will state that the Councilors haven't anything to report particularly that I know of. All we can report is progress.

President Deakyne: You have heard the report of the Council. Will some one move that the report be accepted?

Dr. Flinn: I move that it be accepted—hopefully.

Dr. Hynes: I second the motion.

President Deakyne: All those in favor of the motion signify by saying, "Aye." Opposed? The motion is carried.

Now we will have the report of the Committee on Scientific Work.

Report of the Committee on Scientific Work

Secretary Munson: The Committee on Scientific Work simply presents the program of the State meeting as their report.

Dr. Forrest: I move that the report be accepted.

Dr. Tarumianz: I second the motion.

President Deakyne: It has been moved and seconded that the report be accepted. All those in favor signify by saying, "Aye." Opposed? The motion is carried and the report is accepted.

Next is the report of the Committee on Public Policy and Legislation.

Report of the Committee on Public Policy and Legislation

Dr. J. S. McDaniel: As chairman of the Committee on Public Policy and Legislation, I would like to thank the Secretary, Dr. Munson, for his very efficient work and cooperation with the committee here in Dover in making this meeting a success.

The Committee on Public Policy and Legislation submits the following report:

The State Examining Board and Medical Council have been handicapped in several ways. The State allows a budget of $750 for the Secretary of the Council to take care of the Regular Board, the Homeopathic Board and the osteopath representative.

Seven hundred and fifty dollars is far from being enough to take care of the clerical work, stationery, and so on. In fact, it has been necessary for me, myself, personally to put up about $200 of my own personal money to tide the thing over until the next budget is due, which was due July the first. We have asked for $2000. According to the members of the Budget Committee, they have practically assured us of $1600, which I think will take care of it adequately.

The Delaware State Medical Examining Board this last fiscal year handed to the state of Delaware $2650, which were fees received from applicants for license, both through examination and reciprocity, and we feel that if we hand in $2650 we should receive more than $750 to take care of the budget.

So much for the Board of Examiners and the Medical Council.

I think it should be interesting to all of the members of the Society that when I took up the Secretaryship of this Council, I was presented with the records and files of this Society which gave the record of each physician who has been admitted to practice in Delaware through a Delaware license since 1895. Before that time we have no records. After going over these records very carefully, I can say that several hundred members, or physicians who have been licensed to practice in Delaware, were not on file and there is no record of them at all.

I might state, an example, that Dr. Beebe's name was not with the list in the file of those records. We immediately engaged a certain individual who was quite expert in looking up records, and we have paid him out of the funds of this budget for two or three months' work to complete these files, and at the present time we are practically 100 per cent complete.

We have also consulted the Archives Commission with reference to making a permanent record of these names in the Archives of Delaware. Dr. Vallenger has cooperated with me and has advised me as to how to do this, and in a very short time I expect to hand him over the files so that he can probably make photostatic copies of all the records of every physician who has a license in Delaware.

In the last paragraph of the report we also recommend that the Medical Society of Delaware employ a representative to be present during the next session of the Delaware Legislature.

Dr. Tarumianz: I move that the House of Delegates authorize the Legislative Committee to employ a representative for the biennial legislative session.

Dr. Niles: I second the motion.

President Deakyne: All those in favor of the motion signify by saying, "Aye." Opposed? The motion is carried.

Dr. Cameron: I am not a delegate but I would like to call the delegates' attention to perhaps the incompleteness of the Committee's report. This is not intended as a criticism primarily at all, but we must remember that during the last three sessions of our Assembly a premarital bill has come up, a vaccine bill has come up, and the State Medical Society has not been in accord with either themselves or the General Assembly.

I do believe that it is time now that the Society should place itself on record as to how it stands, because it was intimated to me today that there will be an effort made to introduce legislation for both of these things—compulsory vaccination for small pox, and another pre-marital bill which will be just the duplicate of the last one.

Now I think that most of these things are going to be dumped in the lap of the State Board of Health, and I do believe that the Society should go on record as to whether it is in favor of this legislation or against it.

Dr. Rennie: I very firmly believe that the component parts of the Society have gone on record in the past. These bills have been brought up. I know the New Castle County Medical Society met and that society has gone on record as approving that particular thing, that they were doing that night, as being in favor of the pre-marital bill in a particular form, the form in which it was presented to the society as of that night. So I think it has been, and those things should be in the County Medical Societies which have many more men than there are here and the Medical Societies can see just what these bills are and recommend changes that are necessary.

Dr. Mayerberg: At the last House of Delegates meeting I proposed that the Chairman instruct the Legislative Committee to produce at this session a pre-marital bill. Is Dr. McDaniel ready to produce such a bill? If not, I should like at this time to propose one. The bill is very, very simple, and I don't believe we can leave it for unfinished business or old business. It was recommended that they produce it at this time.

We don't want any elaborate bill. As Dr. Cameron said, somebody is going to give us a bill this year. They nearly passed it last year at the last session, and if we are going to have one, it might as well be one introduced by the Society. Make it as simple as possible, something along these lines: That every person applying for a marriage license in this state shall produce a certificate from a laboratory or a physician of this state stating that twenty days prior to application they had a blood test for syphilis and that the test is negative and that the individual is not in a communicable stage of syphilis.

Furthermore, the fee for that shall be the normal charge for the laboratory and the normal fee of the physician under similar circumstances. I mean by that that if they had an ordinary Wassermann they would make no more charge for that pre-marital test than they would for the ordinary test. Don't set any fee. We would object to setting fees. I say that we can call for the normal regular fee and let it go at that. I propose that as a bill.

Dr. Anderson: Dr. Mayerberg, do you mean that it shall be twenty days or not more than twenty days prior to such application?

Dr. Mayerberg: Not more than twenty days prior to the application.

Dr. Smith: I think it should be twenty days before the license is applied for. It doesn't have to be turned in in twenty days.

Dr. Cameron: My point isn't in controversy here at all. My point is: Is the Society going to produce its own pre-marital bill or is it going to fight or back a pre-marital bill introduced by a layman?

Dr. Mayerberg: That is why I introduced this.

Dr. Cameron: Frankly, while Dr. Mayerberg is a member of my board, I don't agree with his bill because it isn't framed quite the way I think it should be, which is my own opinion and which I think I am entitled to express. But I do believe that a committee from the Society could bring in a bill that would be satisfactory to the Society as a whole.

Dr. Mayerberg: This bill is simplicity itself. We don't want an elaborate bill. In the first place the Wassermann test and all the other tests means absolutely nothing. We know that a lot of patients who have syphilis don't show a positive test at times, but the people of the state demand that they have a certificate from a physician or a laboratory stating that they have had a blood test. As long as it doesn't mean anything, make it as simple as possible and satisfy the people. That is all I say.

Dr. Hynes: I remember about a year ago or possibly two years ago a special meeting of the House of Delegates was called in the office of the State Board of Health. We went over it and the decision of the House of Delegates was to oppose the pre-marital examination bill, and one reason for opposing it was the fact that the fee to be charged was specified and set by the law, but the more cogent reason for opposing it was that such laws had not proved to be of great value in the control of syphilis which is the primary end of the law in the other states. Figures were quoted from other states as to how many casualties were picked up with syphilis and it was a very, very small percentage.

The meeting that Dr. Rennie referred to was the New Castle County Medical Society meeting at which time there was a wave of enthusiasm for pre-marital examination laws, and even then opinion was divided. Perhaps the majority vote was just barely in favor of it.

I think the most recent meeting of this House of Delegates opposed the law not only because of the fee provision but also because it didn't contribute to public health anywhere near what it was supposed to, and it was promoted by certain groups. I think one of the pastors in Wilmington, Mr. O'Brien, had spoken publicly in favor of it, and I think some of the labor unions were strongly in favor of it, but from the standpoint of the professional medical man they couldn't find very many physicians in favor of it. Some of the gynecologists definitely opposed it as being not of any consideration, and at that meeting also some one got out the laws of the state of Delaware and found that there already is a law forbidding people with communicable diseases to marry. That is in the statutes. People with communicable diseases, insanity, and a few other things are not allowed to marry.

All this law does is pass the buck to the physician so that it is his responsibility, and many times he would be in a position of signing his name to something he couldn't entirely prove.

Dr. Tarumianz: I fully agree with Dr. Hynes, and I think Dr. Mayerberg answers the same question affirmatively that a negative Wassermann doesn't mean a thing as far as the medical profession is concerned. Therefore, I do believe that the Society as a profession should not go on record as favoring any bill for pre-marital examination, or a pre-marital bill of any kind.

I think, regardless of what the laymen demand, we should prove to the laymen that it is not scientific nor has it any bearing upon health as far as I am concerned.

Dr. Cameron: This may sound paradoxical, but it isn't. I agree heartily with what has been said that it isn't worth a tinker's dam. It accomplishes nothing whatsoever. As a case-finding means it is worth practically nothing at all.

The thing is this, in this one field alone the medical profession is falling into disrepute with the laity, not the whole laity, but we have certain groups of what might be called intelligentsia who believe the State Board of Health is not performing its duty in having this law passed. If we can't do it, they are going to try to do it.

Now, if the State Board of Health can't have the backing of the State Medical Society then we will all take a slump. I don't care. So far as the law goes it doesn't mean a thing to us. It will mean a little more work. It will mean nothing at all so far as the future of the citizens of the state of Delaware are concerned.

Dr. Flinn: This discussion has gone on for several years. We had a lot of discussion about it a few years ago. I doubt if we can decide it here tonight. Personally, I feel entirely as the last several speakers have said. There is one factor which some day may be valuable, and that is that if some bill goes through or is about to go through the Legislature it might be politically sound for us to sponsor the bill. It should be even simpler than Dr. Mayerberg's and perhaps merely state, in my opinion, that a statement by a competent physician within twenty days, or whatever the time limit is that you want, that after examination of such and such an individual on such and such a date, it is my professional opinion that he does not have any communicable diseases—period—and it is nobody's business what that opinion is based on.

Dr. Mayerberg: That is right.

Dr. Flinn: And it is nobody's business whether you charge a dollar or $100 for it.

Dr. Mayerberg: We had a bill in the Legislature several years ago. They attached too many amendments to that bill. They killed it one night about midnight right in this room because all the quacks wanted the right to issue certificates, and then some senator attached a maximum charge, and we felt that if the state directed us to charge for one thing they could then set fees for everything we do, and we killed that bill. We had to fight hard to do it, too. If you say that no more than the maximum office fee shall be charged that is all there is to it. Then there won't be any complaint about it.

We do know that in Pennsylvania it has gotten to be a racket. Up there it costs about $30 per person to get a certificate. Every ward has its doctors who are favored by the politicians and they do all the issuing of certificates, and certain laboratories charge tremendous fees for the examination, and I am told it costs $30.00. We don't want that here. We don't want a racket here, so dismiss it as easily as you can and make it as simple as you can and have it so that it cannot become a racket.

Now I will tell you why the public wants it. They want to cut down the prosperity of the fellows up there who issue licenses. They are issuing more licenses up there than they used to in ten years because the other states around have made this a dumping ground, and it isn't right. If it doesn't do anything else it will level out this marriage license business and keep it in the states where it belongs.

Dr. Beebe: As a member of this Committee, if such a bill is introduced in the Legislature, I would advocate that whoever is going to be on this Committee next year be authorized to request a special meeting of the House of Delegates to formulate a bill on behalf of the Medical Society of Delaware, otherwise forget it.

Dr. Tarumianz: I second the motion.

President Deakyne: It has been moved and seconded in reference to the pre-marital bill that the committee be authorized to call a special meeting of the House of Delegates to formulate such a bill in behalf of the Society. All those in favor of the motion say, "Aye." Opposed? The motion is carried.

DR. FORREST: I move that the report of the Committee on Public Policy and Legislation be accepted.

DR. TARUMIANZ: I second the motion.

PRESIDENT DEAKYNE: All in favor of accepting the report of the Committee on Public Policy and Legislation say, "Aye." Opposed? The motion is carried and the report is accepted.

Next we have the report of the Committee on Publication. I think it is divided into two parts, that of the Editor and that of the Managing Editor.

. . . Thereupon Dr. Bird read the report of the Editor and Dr. Tarumianz read the report of the Managing Editor, as follows:

Report of the Committee on Publication

As heretofore, we transmit the report of the Committee in two parts: (1) that of the Editor, and (2) that of the Managing Editor:

Report of the Editor

We are nearing the end of Volume 18 of the New Series. The amount of material published is the largest in the history of THE JOURNAL, and the quality has been better. This has been due mainly to the splendid cooperation of the hospitals of the state, whose staff members are now contributing articles of real merit. We hope, and we feel sure, they will continue to maintain the pace set this year. At long last, this Editor has a small surplus of material on hand; we hope that this too will continue. The advantages to those who write scientific papers are many and important, to say nothing of the increased prestige that accrues to the Society and to the profession at large. Our sincerest thanks go to those who contributed to THE JOURNAL this past year.

Our printing house, The Star Publishing Company, has just been purchased by a New Jersey publisher, but since he has announced that there will be no change in the personnel we are assured of the continued courtesies and efficiency we have been accustomed to. To them we extend again our thanks.

To all our members, without whose cooperation and advice our task would have been more difficult, we offer our grateful thanks once more.

Respectfully submitted,
W. EDWIN BIRD, *Editor*

Report of the Managing Editor
August 1, 1945 to August 1, 1946

A. CHECKING ACCOUNT

Checking Account, Wilmington Trust Company, August 1, 1945		$ 446.48
Transferred from the Savings Account		100.00
		$546.48

Receipts

Advertisements	$5,501.91	
Bonus on ads from A. M. A.	824.18	
Subscriptions:		
Med. Soc. Members, Present Year	460.00	
Others	39.20	
Single Copy Sales	.40	
Halftones	191.80	
Refund on Bonding Stenographer	2.43	
Interest on War Bonds (These Bonds in the amount of $3,502.38 were purchased Dec. 10, 1942)	87.50	
Total Receipts	$7,107.42	

Disbursements

Printing & Mailing Journal	$5,132.59	
Postage	3.66	
Notary Fees	1.00	
Coprighting Journal	24.15	
Bonding Stenographer	7.82	
Stationery & Supplies	92.45	
Editor's Salary	1,500.00	
Salary Stenographer	255.00	
Telephone and Telegraph	2.11	
Bound copy of Journal 1944	8.00	
Total Disbursements	$7,081.03	
Balance		$ 26.37
Balance in Checking Account, August 1, 1946		$ 342.87
Accounts Receivable		116.22

B. SAVINGS ACCOUNT

Savings Account Wilmington Trust Co., August 1, 1945		$1,629.27

Receipts

Interest on Savings Account	$30.00	
Total Receipts	$30.00	

Disbursements

Transferred to Checking Account	$100.00	
Total Disbursements	$100.00	
Balance		$1,559.27

C. WAR BONDS

U. S. War Bonds Purchased December 10, 1942	$3,502.38
Balance	$3,502.38

SUMMARY

Savings Account Balance, August 1, 1946	$1,559.27
Checking Account, August 1, 1946	342.87
U. S. War Bonds, August 1, 1946	3,502.38
Grand Total (Accounts A, B, & C)	$5,404.52

Respectfully submitted,
M. A. TARUMIANZ, *Managing Editor*

DR. HYNES: I move the rejort of the Committee on Publication be accepted.

DR. NEESE: I second the motion.

PRESIDENT DEAKYNE: It has been moved and seconded that the report of the Committee on Publication be accepted. All those in favor of the motion say, "Aye." Opposed? The motion is carried, and it is so ordered.

Next is the report of the Committee on Medical Education.

Report of the Committee on Medical Education

DR. FLINN: Mr. Chairman, I will try to make this brief. I do not have a written report. Except for grammatical errors I would like for all of it to be printed.

The Committee has not had a formal meeting. This is not through failure of interest or enthusiasm, perhaps because of it. Some weeks ago I attempted to have a Committee meeting. I received no answer from one member of the Committee, who, I found tonight, has left the state. Another member of the committee, Dr. MacCollum, informs me that one advance in medical education in this vicinity is the increase in the resident staff of the Kent General Hospital, which is most effective.

In New Castle County, as reported last year, we were involved in trying to do something with regard to medical education, particularly with reference to the returning veterans in offering them an opportunity to see something again of medicine and in taking the opportunity ourselves in absorbing some of their special medical experiences.

In line with this, special residency programs have been inaugurated in several hospitals. In the Memorial Hospital there is an established residency, a three-year residency. There is also an established and accredited residency which is a two-year residency. Both of these are approved by the Specialty Board.

At the Delaware Hospital there is an approved medical residency, approved by the Specialty Board for Internal Medicine. There is also an approved surgical residency of one year, not by the American College of Surgeons as yet, but by the American Medical Association. There is also an approved residency in pediatrics, pathology and roentgenology. Associated with this residency program there has necessarily been a postgraduate educational program in process so that there are conferences in all of the departments in the hospital, on a weekly basis. For instance, there is a large group which meets in the X-ray Department at the two hospitals in question. There are perhaps forty members of the medical staff who meet weekly in conferences. There is a smaller number of the surgical staff who meet regularly. The obstetrical and gynecological groups in several places meet regularly.

Also arrangements have been made to have some of these house officers meet with these groups that I have mentioned. There has been some instruction in the bird's eye view of industrial medicine.

Also there is about to be inaugurated at the State Hospital an educational program, I hope by November 1st as Dr. Tarumianz informs me, which will be a program, as I understand it, to not only instruct and uplift the resident staff of the State Hospital but to include our residents in Wilmington and any of those throughout the state who will be able to come, or any other members of the Society or physicians in the state. That should be a most instructive and educational program.

In addition, the Delaware Academy of Medicine is trying to pull itself together after the shock of the war and start again its scientific educational program, and to try to reach more effectively the members of the profession throughout the state so that they may avail themselves more of the library as well as the special scientific and educational exercises and meetings.

This Committee does not pretend to take credit for all of this: it is merely trying to bring the whole thing together and to correlate it. As a result of all these things I have cited, it is most encouraging to me to see the enthusiasm with which everybody has jumped into this general program. It is something which has never happened before to my knowledge in the state of Delaware. It is partly in keeping, I am sure, with the general trend throughout the country. I hope it continues. It is most gratifying to some of those who tried to start it off.

One thing that is being emphasized and that is to give more responsibility continually to the younger men. The situation in this Society, discussed tonight, I think should bear mention in this Committee report. It is important that this Society continue to be active and effective, not for political reasons, but from the standpoint of its historical position and also from the standpoint of increasing and carrying on the medical educational programs. In my opinion, if the latter point fails, the rest of it doesn't make any difference. And, therefore, since it has been called to our attention tonight by the Secretary that the various members of the state Society and the county societies have not fully carried on their responsibilities, to that extent the State Society is interfering with the medical education of the state both as far as our membership and as far as the laity is concerned and, therefore, if for no other reason, from the standpoint of this Committee, it is most important that the State Society as a whole becomes more active, more enthusiastic more present in the minds of all the individual county members, and that it makes the front page more often than it has in the recent past.

President Deakyne: Is there any discussion of Dr. Flinn's report?

Dr. Hynes: I move the report be accepted.

Dr. Tarumianz: I would like to say a word. It is not only enlightening, but it is certainly encouraging.

Dr. Flinn's report should be considered from many aspects of medicine. It seems to me that a young physician who takes an interneship and comes out of the hospital without adequate preparation and education is going to be not only a liability to himself but a liability to the community and to our Society. Therefore, the educational programs should be quite close to the hearts of all members of this Society and they should be supported and be encouraged. I am certainly enthusiastic about Dr. Flinn's report. I would most certainly move to accept the report with great thanks.

Dr. Hynes: In that case I will second it.

President Deakyne: It has been moved and seconded that the report of the Committee on Medical Education as given by Dr. Flinn be accepted. All those in favor of the motion please say, "Aye." Opposed? The report is accepted.

Next is the report of the Committee on Necrology.

Report of the Committee on Necrology

Dr. Vaughan: I have the names of three men who have died during this year, all in Wilmington. I don't know whether you want me to read the obituaries of these three men or not.

Dr. Niles: Go ahead. I think we owe them that much.

. . . Thereupon the obituaries of Drs. Julian Adair, John J. Cassidy and Lawrence J. Rigney were read as printed in The Journal.

President Deakyne: Is there any discussion on Dr. Vaughan's report?

Dr. Niles: I move we rise in reverence to those who have passed away.

. . . Thereupon the members observed one minute of silence . . .

President Deakyne: I would suggest that the rest of the committee reports be briefed and printed in full in The Journal. If any one will make a motion to that effect it will save time, unless you prefer to go on through with the committee reports.

Secretary Munson: Let me suggest that the chairman of the committee be the judge of what is important in his report and what he would like to present tonight.

President Deakyne: Do you make a motion to that effect.

Secretary Munson: It is only a suggestion.

Dr. Tarumianz: I am afraid the report of the Budget Committee is so important that I would like to present it to the members of the House of Delegates and it will be necessary for them to vote on whether they are agreeable to the suggestion presented by the committee, and there is another aspect which Dr. Niles will present.

With your permission I will read the report.

. . . The report of the Budget Committee was read, as follows:

Report of the Budget Committee

The House of Delegates, at its Annual Meeting on October 8, 1945, approved the appointment of a Budget Committee. The Society went on record favoring the securing of an Executive Secretary.

The Budget Committee, after studying the various problems concerning its organization, submits the following report for your consideration:

Our Society is not large enough to spend about $10,000 per annum to have an office of a full-time Executive Secretary or Executive Assistant. Therefore, it was deemed advisable to consider an Executive Secretary on a part time basis. It is the opinion of the Committee that a candidate for such a position should be a member of the Society in good standing and well versed in the various aspects (scientific and business matters) of the Society. The salary of such part time Assistant should not exceed $1200 per annum, and he may have part time stenographic assistance, the expense of which should not exceed $250 per annum.

In the opinion of the Committee, the Executive Assistant will take care of all the administrative details of the Association, working with the regular Secretary of the Society and be under the control of the Council. He will make frequent personal visits to county societies and help maintain a high standard of activity. The Executive Assistant will attend the meetings of the various committees (standing as well as special committees). He will assist the Secretary in keeping a complete record of every physician. These records will be up-to-date and the reports of these records will be sent monthly to the American Medical Association. He will keep a brief history concerning each individual member of the Association, the time he was licensed to practice medicine in the state, the school he attended, his date of graduation and his present location. He will assist the Legislative Committee during legislative session. He will assist the Program Committee to an extent that the Society will have a minimum of 2½ days of scientific meetings, at which time outstanding speakers will present their papers.

It would be the duty of the Executive Assistant to follow up all Resolutions passed by the Society at annual meetings.

It is obvious that the Society cannot afford to spend an additional $1500 a year unless we increase the dues to a minimum of $10.00 per member, per annum. At the present time the Society is receiving only $6.00 per member, of which $2.00 is paid to the Journal, leaving $4.00 for all expenses involved in the working mechanism of the Society. It is the opinion of the Committee that this year we should increase the dues to the members from $6.00 to $10.00 per annum, and that we should serve notice of amendment to the By-Laws, so that by next year we could increase the dues to $14.00 per annum. This is according to our By-Laws, Article I, Section 9, which says: "Funds shall be raised by an equal per capita assessment of each component Society and the amount shall not exceed $10.00 per annum."

Respectfully submitted,
M. A. TARUMIANZ, *Chairman*

PRESIDENT DEAKYNE: Is there any discussion of the Budget Committee's report?

DR. FORREST: I move the report be accepted.

DR. NILES: I second the motion.

PRESIDENT DEAKYNE: It has been moved and seconded that the Budget Committee's report be accepted. All in favor say, "Aye." Opposed? The motion is carried.

DR. TARUMIANZ: May I make a second motion immediately? I would suggest that the President and the Council have the power to appoint such Executive Assistant.

DR. HYNES: I second the motion.

PRESIDENT DEAKYNE: You have heard Dr. Tarumianz's motion which was seconded by Dr. Hynes. All those in favor of the motion say, "Aye." Opposed? The motion is carried.

N. P. C.

DR. NILES: At this time, in discussing this matter with the Budget Committee, I want to read a report. Of course, I won't go into detail as to the NPC, the National Physicians' Committee, but all of you know that it is a political organization. It represents the American Medical Association and it is the organization that defeated the S-1606 bill.

In conjunction with that, there is a branch organization of the A. M. A. that takes in seven states of the Atlantic seaboard—New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia and West Virginia. This organization is called the Middle Atlantic States Regional Conference on Medical Service, and it is plain what that is. It is the establishment of machinery for calling of special meetings or installing special actions in our area effective between the Regional Conference and the A. M. A. Council on Medical Service. The chairman of this Conference is Dr. Borzell. We have had two meetings.

It was voted that each one of these states give $150 for this year to carry on the expenses of this Regional Conference. I received a letter from Dr. Bates, who is the Secretary, stating that on the 13th of October a meeting will be due and he says: "To date your state has not paid its contribution of $150." If it is acceptable to the members, I would like to have a check from our Treasurer at a very early date, so that I can present it at this meeting in Philadelphia on October 13.

As a member of the Legislative Committee I was asked to attend the two N. P. C. conferences in St. Louis, one in February and one in September. I am not going to try to tell you the amount of good that this organization has done for the medical profession of this country. There are a number of copies of the book "Compulsion" that I was asked to distribute to you so that you might get the whole data and save any effort on my part in telling you what it is all about.

This much I can tell you in plain English. If it hadn't been for this organization, the National Physicians' Committee, we would have been defeated in Washington on the Wagner Bill, and this is the first time that the medical profession has had a legislative front with any strength that could do any good.

It is well understood by the leaders of the A. M. A. that the extremists of the New Dealers have been making a desperate effort to regiment medicine, and the reason for that is that, after a survey on their part, they found that the medical profession was the weakest spot the government could attack. It was weaker than law. It was weaker than business. And so they attacked us, and they made an extra special effort to gain their point and regiment medicine, which would be merely a stepping-stone to the other branches of our national economy.

It was a thing that was obnoxious to us, and you must give the whole credit to this National Physicians' Committee. They weren't doctors—they were lawyers; they were senators, and they were business men who represented us and steered us through the committee hearings in Washington, to the extent that the Committee won out, this year.

We were saved through the efforts of Senator

Donnell of Missouri. We give him credit for saving us in that the witnesses representing the medical profession in those hearings, got all balled-up and Senator Donnell stepped into the breach and steered our men through their questioning and he came out victorious, with the help of Senator Taft.

Dr. Beebe: I don't know of any other statement I can make except to say that I believe it is essential to the good of this Society, and medicine as a whole, and that the A. M. A. is fully behind this N. P. C. I can tell you this about the conferences in San Francisco and Chicago—

Dr. Flinn: Are they doing it officially?

Dr. Beebe: Unofficially.

Dr. Flinn: Then we can't contribute officially.

Dr. Beebe: If we don't, we're sunk.

Dr. Niles: Six other states have.

Dr. Tarumianz: I move that the Society authorize the Treasurer to pay $150 to the N. P. C.

Dr. Niles: No, Dr. Tarumianz. It is the Middle Atlantic States Regional Conference on Medical Service, and is to be a contribution.

Dr. Tarumianz: As a contribution from our Society. I might say this much, that we are fighting socialized medicine. This is part of that fight and we should be in it.

Dr. Bird: I second the motion.

President Deakyne: A motion has been made and seconded that we authorize the Treasurer to pay $150 to the Middle Atlantic States Regional Conference on Medical Service. All in favor of the motion say, "Aye." Opposed? The motion is carried.

Annual Dues

Dr. Tarumianz: Mr. President, I think we should also have a motion to increase the dues from $6 to $10, and if you don't mind, Sir, I move that the dues be increased from $6 to $10, and that the membership be notified that next year the dues may be raised to $14. I would like to include that in the motion.

Dr. Niles: I second the motion.

President Deakyne: It has been moved and seconded that the dues for 1947 be increased from $6 to $10, and that the membership be notified that the dues for 1948 may be $14. All those in favor of the motion say, "Aye." Opposed? The motion is carried.

Are there any other reports?

Cheff Memorial Fund

Dr. Lattomus: I don't want to take any more of your time than I have to, but I must know what to do with the Cheff Memorial Fund.

Secretary Munson: That is coming up under unfinished business.

Report of the Committee on Cancer

The Committee on Cancer met on October 8, 1946. The chief matters discussed were the Educational program of the American Cancer Society and a suggested program of the establishment of cancer detection clinics in several locations throughout Delaware.

The Committee approves the Educational program of the American Cancer Society, and in particular the program designed for secondary schools.

The Committee approves the principle that cancer detection facilities be made available at several locations throughout Delaware. Two groups are interested in cancer control; namely, the Delaware Division, American Cancer Society, and the State Board of Health. It is suggested that the Cancer Committee of the State Society act as an advisory committee to these organizations, and that the Cancer Committee be empowered to review, modify or approve any plans submitted by the above organizations in the name of the Delaware Medical Society.

Respectfully submitted,
John F. Hynes, *Chairman*

Dr. Hynes: I won't read the entire report of the Committee on Cancer, but I want to ask one thing. There has been some discussion on the establishment of a cancer detection clinic at the American Cancer Society, Delaware Division, and also at the State Board of Htalth. The State Board of Health has an appropriation of $5000 to use for cancer control this year.

At the end of the report it is suggested that the Cancer Committee of the Medical Society of Delaware act as an advisory committee to these organizations, and that the Cancer Committee be empowered to review, modify, or improve any plans submitted by the above organizations in the name of the Medical Society of Delaware.

Now, that is simply backing up these organizations. The State Board of Health and the American Cancer Society may make plans with regard to the cancer clinics which they may wish to submit to the State Society for approval. We are simply asking for the Cancer Committee to pass on those plans in the name of the Medical Society of Delaware.

I would like to put that in the form of a motion.

Dr. Flinn: I will second the motion.

President Deakyne: Dr. Hynes' motion has been seconded by Dr. Flinn. All in favor of the motion say, "Aye." Opposed? The motion is carried.

State Health and Welfare Center

Dr. Tarumianz: I would like to present to the members of the House of Delegates a matter pertaining to the establishment of the State Health and Welfare Center. I would like the House of Delegates to approve the idea and also ask the State Medical Society to authorize the House of Delegates or the President to appoint a committee of five men, one from each county and two at large, to represent the Society in an advisory capacity.

I believe that this is going to be a great stimulant to the medical profession, and it should not be apart from the Medical Society's life. Therefore, such an advisory committee, in conjunction with the Governor's Advisory Committee, may do a great deal of good for the State.

So my motion is that the Society approve the establishment of the Health and Welfare Center and authorize the President of the Society to appoint a committee of five which will act in an advisory capacity in conjunction with the Governor's Advisory Committee.

President Deaknyne: Is there any discussion on the motion?

Dr. Flinn: Haven't we enough committees? Isn't there a committee that that can be utilized without making a new one?

Dr. Tarumianz: I don't know of any except the Postwar Planning Committee. They might assume that responsibility except that it is a very large committee, and I don't think it is wise to have too large a committee. I think five would be sufficient. The Governor's Advisory Committee is composed of six members. I am chairman of that committee, and Dr. Niles is a member of that Committee as President of the State Board of Health. Each agency is represented by the President of the Board; that is, of those agencies that are directly implicated in this Health Center.

It wouldn't do any harm for the Society to play a role in the development of this Center. Naturally, the contact with the Center would be purely on the basis of visiting and consulting. It is going to be an "open" Health Center. Each doctor may send his cases there and continue treating them there. So I think it would be wise and quite a nice thing to have an advisory committee. I don't know what the opinion of the other members of the Society is.

Dr. Niles: There is one thing certain about it. You will feel regretful, I think, in the future if you don't allow the State Medical Society to be represented by a committee of some sort. It costs you nothing. And an advisory committee, as Dr. Tarumianz suggested, would tie us up with the advancement which this thing is going to be, and the people of the State of Delaware are going to be very enthusiastic over it. We shouldn't take the attitude of standing aside in an indifferent attitude. So I feel that a committee such as he suggests would at least tie the medical profession up with those things.

Dr. Tarumianz: Mr. President, I move that the House of Delegates approve the establishment of the State Health and Welfare Center. That is my first motion.

Dr. Niles: I will second the motion.

President Deakyne: Motion has been made by Dr. Tarumianz and seconded by Dr. Niles that the House of Delegates approve the establishment of the State Health and Welfare Center. All those in favor of the motion say, 'Aye." Opposed? The motion is carried.

Dr. Tarumianz: My second motion is that the President of the Society be authorized to appoint an Advisory Committee that will work in conjunction with the Governor's Advisory Committee.

Dr. Prickett: I will second the motion.

President Deakyne: It has been moved and seconded that the President of the Society appoint an advisory committee to work in conjunction with the Governor's Committee. All those in favor of the motion say, "Aye." Opposed? The motion is carried.

Has Dr. Stayton a report on the Auxiliary Committee?

Secretary Munson: There is no report on that.

President Deakyne: Dr. Anderson, chairman of the Committee on Syphilis.

. . . Dr. Anderson then read the report of the Committee on Syphilis as follows:

Report of the Committee on Syphilis

No meeting of the Committee has been held this year; however, contact was made with these members by me over the telephone.

Through the courtesy of the State Board of Health, the following information was obtained:

There are 14 Venereal Disease Clinics in operation in Delaware, and the average current patient load for all clinics is 161 for the white race, and 1,039 for the colored race.

These Clinics are located as follows: Wilmington, 5, four of which are run by the respective hospitals—Delaware, Wilmington General, Memorial, and St. Francis, while the fifth is located at 200 W. 8th St. and is conducted by the State Board of Health. The other clinics are located at Middletown, Newark, Smyrna, Dover, Milford, Georgetown, Frankford, Lewes, and Seaford. Number of tests performed by the State Board of Health Laboratory during the past year:

Wassermann & Kahn	38,767
Darkfields	19
Smears for gonorrhea	1,774
Cultures for gonorrhea	147

A total of 26,331 doses of arsenic and bismuth have been given by the respective clinics, while 584 doses of penicillin were given. During the past year the number of grams of arsenicals distributed to private physicians was 332,915.

Syphilis—	
Reported by private physicians	26
Reported by Army and Navy Services	9
Reported by Clinics	374
New cases found as a result of Laboratory questionnaire being sent to physicians and returned	646
Total New Cases of Syphilis	1,055
Gonorrhea—	
Reported by private physicians	1
Reported by Army and Navy Services	78
Reported by Clinics	153
New Cases of Gonorrhea	319

The following-up of delinquent venereal cases and the locating and checking-up on venereal contact cases in the city of Wilmington is being carried on by a lay female at the Health Center and also a full-time nurse from the City Board of Health, while this work in the other part of the state is being done by the Public Health Nurses, all of which we feel is inadequate, due to their being overburdened with other duties, etc.

The Veterans Administration is active in seeing that veterans who contracted venereal diseases while in the service and who did not complete their treatment before being discharged from the service, receive adequate treatment from a Veterans Hospital or a competant designated private physician. This is a great aid in helping to control venereal diseases in this state, as well as the nation as a whole.

The Committee respectfully proposes and recommends the following:

I. That the name of the Committee on Syphilis be changed to Committee on Social Hygiene or the Committee on Venereal Diseases.

II. That the Committee making such report consist of one employee of the State Board of Health at Dover and two physicians who specialize in the treatment of venereal diseases.

III. That a program of education be inaugurated, so that the youth of high school age as well as others may be properly instructed in social hygiene, and that such instructions be given by one who has been properly trained along this line, preferable a physician or nurse.

IV. That the Board of Health employ four special nurses for each of the counties, and one in Wilmington to do nothing but venereal disease work in clinics, follow-up cases and check-up on contacts, etc.

V. That the State Board of Health establish centers for the rapid treatment of syphilis whereby patients can be hospitalized.

Respectfully submitted,
L. W. Anderson, *Chairman*

Dr. Anderson: In discussing this matter with one of the members of the committee we had in mind that this Fort Du Pont Center would be an ideal location for one of these rapid treatment locations or centers.

President Deakyne: Dr. Phillips, have you anything to report?

Report of the Committee on Tuberculosis

Your Committee on Tuberculosis wishes to submit the following report for the past fiscal year from July 1, 1945 to July 1, 1946. Some of the figures are for the calendar year 1945, as noted.

TUBERCULOSIS MORTALITY — DELAWARE 1945

		Number	Population	Rates
Wilmington City	White	33	100,003	33.0
	Non-white	19	15,453	122.9
	Total	52	115,456	45.
New Castle County Inc. Wilmington	White	45	167,272	26.9
	Non-white	26	21,554	120.6
	Total	71	188,826	37.6
New Castle County not Wilmington	White	12	67,269	17.8
	Non-white	7	6,101	114.7
	Total	19	73,370	25.8
Kent County	White	5	29,249	17.1
	Non-White	9	6,491	138.6
	Total	14	35,740	39.1
Sussex County	White	12	46,410	25.8
	Non-white	3	9,589	31.2
	Total	15	55,999	26.7
State Resident	White	62	242,931	22.5
	Non-white	38	37,634	100.9
	Total	100	280,565	35.6
Non-resident	White	0		
	Non-white	2		
	Total	2		
State Resident & Non-resident	White	62	242,931	25.5
	Non-white	40	37,634	106.2
	Total	102	280,565	36.3

Rates per 100,000 population.

This is a decrease of 19 deaths over the 1944 stastics. There were 11 less deaths among the white and 8 less deaths among the colored. The decrease in white deaths occurred as 1 in Wilmington, 2 in rural New Castle, and 8 in Sussex; while the colored was 3 less in Wilmington, 3 in rural New Castle, and 3 in Sussex. Kent County showed an increase of 1 colored death over the 1944 statistics.

TUBERCULOSIS MORBIDITY 1945 — DELAWARE

Political Jurisdiction	Number of Cases
City of Wilmington	112
New Castle County Not Including Wilmington	29
Kent County	22
Sussex County	33
State Total	196

Cases by Race and Sex

White	Male	78
	Female	47
Colored	Male	32
	Female	39
Total		196

For the calendar year 1945 there were 1.9 cases reported per death.

The average daily population of Brandywine Sanatorium was 101.9. There were 101 admissions, of which 47 were male and 54 female. 101 patients discharged, of which 47 were male and 54 female. This includes 26 deaths.

The average daily population of Edgewood Sanatorium was 45.7. There were 55 admissions, 30 being male and 25 females. The total discharged was 40, of which 20 were males and 20 females. Of this total 27 were deaths.

Visiting Nurse Association, for the tuberculosis nursing work reports the following:

Number of cases carried from 1944	6	
Number of cases admitted in 1945	33	39
Number of cases discharged in 1945	36	
Number of cases carried into 1946	3	39
Number of visits made during the year	404	

Of the 36 discharged cases:

4	died (2 white; 2 colored)
3	Brandywine Sanatorium
6	Edgewood Sanatorium
1	Moved out of town
10	Family & Private physician
2	Other Hospitals outside State
10	State Nurse Supervision
36	

These cases were reported by:

14	Physician
6	Family
14	State Nurses
1	Delaware Hospital
1	Visiting Nurse
36	

Age Groups:

1 – 15 years	3
15 – 20 years	0
20 – 30 years	7
30 – 40 years	5
Over 40	20
	36

Number of white patients	19
Number of colored patients	17
	36

The Delaware Anti-Tuberculosis Society continues to cooperate with the State Board of Health in tuberculin testing, x-raying and fluoroscoping. Three fluoroscopes are maintained by the Society in the Health Centers in Dover, Georgetown, and Laurel. Continuing its plan of x-raying in the Wilmington and downstate schools in alternate years, the downstate schools were x-rayed during the past fiscal year. X-rays taken of students, teachers, and other personnel numbered 8,157.

In addition to the above, 1,371 additional x-rays were made in Wilmington, the majority of which were food handlers.

In cooperation with the Delaware State Board of Vocational Education, a rehabilitation program was maintained for discharged cases from the sanatoria, selective rejectees, and discharged veterans. Since this service was inaugurated in 1942, 434 contacts have been made and 56 discharged patients have been placed in satisfactory employment.

The Society maintains a health education service throughout the state in cooperation with the city and state schools.

Sunnybrook Cottage (Preventorium conducted by the Society) has 22 beds for the care of Delaware children who have tuberculosis contacts. The Cottage reports 26 children were cared for during the year. The patient days for the year numbered 6,954, for an average daily census of 19.

Through the State Board of Health chest clinics there were a total of 585 visits by tuberculous patients. Of these 92 were new cases, and of this total 33 were found to have active pulmonary tuberculosis. This is a decrease of 27 cases over the previous year, and 23 less active new cases. The routine tuberculin testing of all contacts under 14 years of age continues in these clinics as well as quite a number of adult patients.

Respectfully submitted,
L. D. PHILLIPS, *Chairman*

SECRETARY MUNSON: The report is mostly statistics and I think it might well be printed in THE JOURNAL.

PRESIDENT DEAKYNE: Dr. Stambaugh, have you anything to report for the Committee on Maternal and Infant Mortality?

Report of the Committee on Maternal and Infant Mortality

Your Committee is indebted to the State Board of Health for statistics on maternal and infant mortality for 1945.

A maternal mortality rate of 3 per 1000 live births is recorded. Eighteen maternal deaths and 6019 births are listed. The 1945 rate for the United States as a whole is 2.3 per 1000 births, incidentally a very low rate. The rates for Delaware by counties are: New Castle—2.8 for white, 5.6 for colored; Kent—2.0 for white, 0 for colored; Sussex—2.8 for white, 4.0 for colored. A high figure of 4.4 for white and 8.7 for colored is noted for Wilmington, where, because of excellent facilities, hospital deliveries should be on the increase.

The above record of deaths is proof that the Society should interest itself each year in reducing deaths from any cause during pregnancy and delivery. The year 1945 may reflect a "war year", with less antenatal or natal care. Since most deaths are primarily due to infection, hemorrhage, Cesarean section or ruptured uterus, the year may reflect the modern trend for new and untried analgesics or more operative obstetrics.

A separate listing of the State Board of Health to your Committee is the number of Delaware births on which blood Wassermanns were taken. Wilmington and New Castle County averaged 93.9%, Kent County 67.1%, Sussex County 63%. Routine blood testing is considered of great importance if syphilis is to be eradicated as a cause of infant mortality.

Infant mortality rates by counties are: New Castle—30 per 1000 live births; Kent—51.5; Sussex—67.2. The rate for the entire state is 37.5. The figure is commendable. The colored infant mortality materially affected the above figures. For example, the colored infant mortality for Sussex County was 116.4.

Reduction in infant mortality revolves around good prenatal, natal, and neonatal care. Syphilis in the mother must be treated before the fifth month of pregnancy. The obstetrician must select a good analgesic in safe dosage, if he is to avoid asphyxia. He knows the uses and abuses of his instrument, the forceps, if he is to prevent severe birth trauma. The pediatrician's responsibility calls for expert care of premature infants and respiratory conditions at birth, since a high percentage of infants die on the first day or during the first week.

Respectfully submitted,
E. L. STAMBAUGH, *Chairman*

DR. NEESE: I move the reports of the committees be accepted and published in THE JOURNAL.

DR. PRICKETT: I second the motion.

PRESIDENT DEAKYNE: Motion has been made and seconded that these reports be accepted and published in THE JOURNAL. All those in favor of the motion say, "Aye." Opposed? The motion is carried. The reports will be published in THE JOURNAL.

Dr. Corrin, have you anything to report for the Committee on Mental Health?

SECRETARY MUNSON: I suggest that it be published. It is a good report and should be published.

Report of the Committee on Mental Health

The war in many ways has had its harmful effect on the mental health of the populace. Alarming newspaper headlines and radio broadcasts, mass murder and wholesale destruction of lives and property have been harmful to bodily physiology and well being. The loss of relatives, friends and acquaintances has had even more profound and shocking effects. Veterans who have passed through long periods of fatigue, loss of sleep, harrowing experiences and dangers, are returning to civil life, many of them suffering severe nervous exhaustion states and the more disturbing psychoneuroses manifest in gross disorder of organic physiology. Veterans suffering these disorders are experiencing much more sympathetic and understanding care and treatment than has ever before been shown by the medical profession and government.

The psychoses, the more pathological manifestations of brain and nervous system disease, show no variation, as is to be expected. The war, however, has made institutional care of these patients more difficult due to lack of help and the increased price of food, difficult problems for institutions working on fixed budgets.

The out-patient care of neuropsychiatric patients is being supplied by the mental hygiene clinics and the hospitals supplying this service. Senate Bill No. 249 provides for the establishment of traveling clinics for veterans, working in conjunction with state mental health organizations. A steadily expanding mental health program in the schools is being developed to instill principles of preventive medicine in the child before superstitions and misunderstandings concerning diseases of the brain and nervous system have an opportunity to have their harmful affects. There is a great need for education of the public in this field today.

Respectfully submitted,
K. M. CORRIN, *Chairman*

PRESIDENT DEAKYNE: Dr. Manning, have you a report from the Committee on Criminologic Institutes?

SECRETARY MUNSON: There is no report.

PRESIDENT DEAKYNE: Committee on Medical Economics and Public Relations. Dr. Niles and Dr. McDaniels have given a report on the Medical Economics and Public Policy.

Now, the Committee on Revision of By-Laws.

. . . Dr. Bird then read the report of the Committee on Revision of By-Laws . . .

Report of the Committee on Revision of By-Laws

Now that practically all the members who were in the services have returned, the time has come to revise the By-Laws, as was ordered by the House of Delegates in 1941. Accordingly, your Committee will proceed with the work. Since the American Medical Association is now assisting the state societies whenever they wish to revise their By-Laws and will send a member of their Bureau of Legal Medicine here to assist us in person, the exact time of working up these proposed By-Laws will have to depend upon the exact time the A. M. A. representative can come here. It will, however, be finished in time to present to the county societies two months before the next session of this House, as is now required of amendments. The proposals will not be mere amendments but a complete revision, thus the proper procedure probably would be to duplicate that of the last revision, 1923, when the proposals were sent to the county societies in advance and acted upon not by the House of Delegates but by the whole Society, sitting as a Constitutional Convention.

Respectfully submitted,
W. EDWN BIRD, *Chairman*

PRESIDENT DEAKYNE: Has Dr. Speer anything to report for the Committee on Vocational Rehabilition?

SECRETARY MUNSON: No report.

PRESIDENT DEAKYNES Dr. Tarumianz for the Committee on Postwar Plans.

DR. TARUMIANZ: The committee will report at the 1947 meeting. There will not be any reports before that time.

President Deakyne: Next is the report of the Committee on the Cheff Memorial.

Report of the Committee on Cheff Memorial

Dr. Lattomus: Mr. President, the Committee of three, consisting of Dr. Miller, Dr. Heather and myself, was appointed by the President last year to look into the advisability of making some sort of collection for a super-memorial for Donald Cheff, because he was the only man of our group who was killed in the war. This Committee received a lot of criticism in the New Castle County Medical Society meeting because it failed to do anything in the form of collecting money. It was felt by the members of that Society that it was necessary to collect the money at once rather than wait. We tried to tell them that we were not authorized to go ahead and as a consequence the same Committee was appointed by the New Castle County Medical Society to go ahead and collect funds, under our suggestion that this money be put in an insurance policy payable when his boy is ready to enter college. So we started to work on that, and I discussed it with Dr. Munson and he got in touch with the councils of the two lower county Societies. One of the counties requested that they be included in this, and as a result we went ahead.

I think you have all received a letter. In that letter we suggested that those men who stayed at home contribute $100—a mere suggestion—and those who were in the armed forces $25. We regarded that as being a fair contribution from both.

We sent these letters out in the hope that we would get the money while it was still fresh in the minds of the men that there was one of our group who had made the supreme sacrifice.

To date we have heard from 52 members and have received $3195. Our suggestion is that this money, when all of it is collected, be used to purchase an insurance policy, a paid-up insurance policy, which will come due at the time this boy will enter college and will be paid in four equal payments, one for each year in college.

President Deakyne: Is there any discussion on Dr. Lattomus' report?

Dr. Tarumianz: Is that a motion?

Dr. Niles: Is there any provision being made of the disposition of this money in case of this boy's death?

Dr. Lattomus: That I thought we had better leave up to the Society to decide. Our thought in the matter, and it is up to the Society to decide what to do with it, is that a provision be made that in case of his death the money would revert to his mother, Mrs. Donald Cheff.

Dr. Niles: I think it is a wonderful gesture, but I don't think it is advisable to start a precedent. It would mean that we would just drift into a lot of stuff that we couldn't get out of.

Dr. Rennie: I don't think getting killed is a precedent. I think that if more are killed in the future we ought to do the same thing.

Dr. Lattomus: This is not an assessment: this is a voluntary contribution. If this Society does not want to okay the Committee's action—we have only received a few checks from downstate—I will be glad to refund those because I have kept them. It will go through the New Castle County Medical Society because there it has already been authorized. The only question, as a matter of fact, is whether this is to be a state contribution or whether it is to be a New Castle County contribution.

Dr. Tarumianz: I move that the Society as a whole approve this gesture, and have it on a voluntary basis. Every member should be obligated to think about it and contribute whatever he is able to contribute whether it is $25 to $125. It should be statewide because this boy certainly belonged to the whole profession of the state of Delaware.

Dr. Niles: I will second the motion.

President Deakyne: It has been moved and seconded that we contribute according to the arrangements made by the Donald Cheff Memorial Committee.

Dr. Lattomus: Would you mind including in that that you empower the committee to purchase this policy?

President Deakyne: The motion is amended? All in favor of the amended motion—

Dr. Chipman: May I have the privilege of the floor? Not that I object to this provision or anything that is done or had already been done by this Committee, but as long as this becomes State Society business, it seems to me that the way to provide for this boy should be handled directly in the State Society by the Council or somebody and some one should think this out before making a quick decision because lots of things can happen to a boy before he grows up. Suppose he doesn't want to study medicine. Suppose he doesn't want to be educated. Suppose he goes out here and gets killed. Suppose he dies of something else. This thing should be studied out, not that I am opposed to the scheme at all. It is perfectly all right. It seems to me that it should go to the Council or somebody else to make provisions properly and not too quickly.

Dr. Tarumianz: I will amend my motion to the effect that the Committee be authorized to assume the responsibility as to how to distribute the funds collected for that purpose. If something happens to the boy, certainly the mother is entitled to the $6000 from the Society as its contribution to her welfare. I think we could do that much.

President Deakyne: Will some one second Dr. Tarumianz's amendment to his motion?

Dr. Forrest: I will second it.

President Deakyne: It has been moved and seconded that the Committee be authorized to assume the responsibility of disbursing the money thus collected for the Cheff Memorial. All those in favor of the motion say, "Aye." Opposed? The motion is carried.

Report of the Delegate, Dr. Beebe, to the American Medical Association.

Dr. Beebe: Unless you want to stay here for breakfast, I think you had better print it in The Journal.

As you know the House of Delegates was not allowed to meet in June 1945 and were finally allowed to hold our meeting in December. They had a lot of business to transact, and I have been abstracting it to the best of my ability, but I don't deserve to burden you with it tonight.

I also have the abstract of the San Francisco session of July 1946, and as you all know it meets in Atlantic City in 1947.

Dr. Prickett: I move we accept the report.

Dr. Forrest: I second the motion.

Dr. Beebe: The Editor is authorized to edit this as much as he likes.

Report of Delegate to A. M. A.

The annual session of the House of Delegates of the American Medical Association, which was to have been held in Chicago in June, 1945, was held December 3rd to 5th, 1945, in Chicago. The postponement was due to orders of the Office of Defense Transportation.

The House of Delegates was called to order by the speaker, Dr. H. H. Shoulders, Nashville. 160 delegates were registered.

Dr. George R. Minot, Boston was selected by the House to receive the Distinguished Service Award of the American Medical Association.

The address of the speaker advocated better public relations, education of the public in the progress in the science and art of medicine, and stated that the factor of paramount importance is one which in all justice and propriety may be called the soul of medicine.

The Speaker appointed his references committees. Your delegate was appointed on the Committee on Sections and Sections Work.

The president, Dr. Herman L. Kretschmer, Chicago, spoke principally on the regimentation of the practice of medicine and the tendency of the country to enact legislation along this line.

Dr. Kretschmer suggested that x-ray films should follow the patient, thereby avoiding a repetition of these studies. There has in the past been a refusal on the part of physicians, hospitals and x-ray men to release them, and the result is that the patient is irked, an expensive procedure must be repeated and enemies are made for the medical profession.

He also touched on the hormone situation, warning against their misuse and the possibility of another vitamin-like fiasco, the need to educate our people on the subject of animal experimentation, the need for study toward positive conclusions on the marihuana problem, and the social and economic as well as medical problems raised by the increasing number of patients suffering from chronic illness. In conclusion, he urged that all possible help be given returning medical officers in obtaining suitable office space, hospital appointments, etc.

The President-elect, Dr. Roger I. Lee, Boston, stated that perhaps the most common adverse comment on the House of Delegates and indeed on the American Medical Association relates to what is called insufficient infusion of younger men, of young blood into the House of Delegates. He believes that rapid change in the personnel of the House of Delegates is of debatable value, since there are advantages in continuity of service, but there are also advantages in steady, if not rapid, change, and it is wise and desirable that as many Fellows of the Association as feasible be encouraged to participate in the affairs of the Association.

The report of the Secretary stated that at the close of the year 1944 124,595 members were enrolled; there were 1952 deaths. The gain in membership in 1944 was 1009.

Dr. J. R. Bloss, Chairman, presented the report of the Board of Trustees, called attention to the fact that due to war conditions the working personnel of the Association had been depleted and at one time was 200 below normal and the staffs of the councils and bureaus were seriously curtailed by assignment of staff members to active duty with the military forces. All employees assigned to military duty were assured their positions would be kept open for them. He submitted also an official report of the Treasurer and the Association's auditors.

He reported that the radio work of the Bureau of Health Education falls into four principal classifications: network broadcasts, electrical transcriptions, script library, and special broadcasts. Of these classifications the electrical transcriptions turned out to be quite successful.

Report of Council on Medical Education and Hospitals was given by Dr. Ray Lyman Wilbur, Chairman. In regard to the supply of pre-medical and medical students, he stated that there is an utterly inadequate number being trained for future admission to medical schools. The House of Delegates passed a resolution which was sent to the President, the Secretaries of War and Navy, the Director of Selective Service, and all members of the House and Senate military affairs committees. The responses to this communication clearly indicated that the governmental departments and agencies involved were unwilling to make any adjustment, and it seemed apparent that the only remaining approach was to the Congress of the United States. A bill providing for the deferment of appropriate number of premedical students was introduced by Representative Louis E. Miller of Missouri. Hearings were never held on this bill. In February 1945 conferences were held with representatives of Senator Allen J. Ellender of Louisiana, who has become interested in this problem, and on February 26, 1945, Senator Ellender introduced into the Senate Bill S. 637, which was referred to the Committee on Military Affairs. At the time these minutes were printed there has been no solution of this problem. Even if the Ellender bill is passed, there is likely to be a considerable reduction in the number of physicians available for civilian medical care. By June 30, 1948, there will be only 16,000 additional physicians to meet the increased need of over 30,000.

The Council reported formal action on several medical schools during 1944, among which were the University of Alabama, University of Missouri. Proposals have been made for expansion from the two year to the four year status for the University of North Carolina, North Dakota, South Dakota and Mississippi. This tendency has been encouraged in institutions in which it is apparent that facilities are available.

During the last few months three types of bulletins have been released under the direction of the Council—bulletins on special subjects, news letters, bulletins from the Washington office. The Council intends to supply as soon as possible "speakers' kits" to all who may be called on to make talks to medical societies or lay groups.

One of the mandates of the House of Delegates was that the Council should employ a full time Director of Insurance. The Council feels that the field of voluntary insurance is one which is perhaps the most important at this time. So far they have been unable to secure a qualified man.

The Council on Medical Service and Public Relations, together with the Board of Trustees on June 22, 1945, adopted the following 14-point program, which has been printed many times in the medical journal but I will read it if you wish:

1. Sustained production leading to better living conditions with improved housing, nutrition and sanitation which are fundamental to good health; we support progressive action toward achieving these objectives.

2. An extended program of disease prevention with the development or extension of organizations for public health service so that every part of our country will have such service as rapidly as adequate personnel can be trained.

3. Increased hospitalization insurance on a voluntary basis.

4. The development in or extension to all localities of voluntary sickness insurance plans and provision for the extension of these plans to the needy under the principles already established by the American Medical Association.

5. The provision of hospitalization and medical care to the indigent by local authorities under voluntary hospital and sickness insurance plans.

6. A survey of each state by qualified individuals and agencies to establish the need for additional medical care.

7. Federal aid to states where definite needs is demonstrated, to be administered by the proper local agencies of the states involved with the help and advice of the medical profession.

8. Extension of information on these plans for hospitalization and illness to determine their adequacy in meeting needs and maintaining continuous improvement in quality of medical service.

10. Discharge of physicians from the armed services as rapidly as is consistent with the war effort in order to facilitate redistribution and relocation of physicians in areas needing physicians.

11. Increased availability of medical education to young men and women to provide a greater number of physicians for rural areas.

12. Postponement of consideration of revolutionary changes while 60,000 medical men are in the service voluntarily and while 12,000,000 men and women are in uniform to preserve the American democratic system of government.

13. Adoption of federal legislation to provide for adjustments in draft legislation which will permit students to prepare for and continue the study of medicine.

14. Study of postwar medical personnel requirements with special reference to the needs of the Veterans' Hospitals, the regular Army, Navy and United States Public Health Service.

A resolution restricting the activities of the employees of the American Medical Association received considerable support but was finally defeated.

Maj. Gen. Paul R. Hawley, Acting Surgeon-General of the Veterans Administration, stated that he had been asked many times what was the greatest advance in medical science between World Wars I and II and the expected answer was plasma, whole blood, chemotherapy and penicillin, but that in his own mind the greatest advance was the better education of doctors, there being no substitute for a good doctor. He said that, in the Veterans Administration, they had some fine hospitals and some fine clinics, so that there are good doctors in the Veterans Administration. The only trouble is there aren't enough of them. In conclusion, he stated that he was deeply opposed to government control of the medical profession, and that if he is not permitted to bring the best in American medicine to the veteran he would withdraw at once from the program.

A resolution was adopted that the frequency of staff meetings of hospitals should be determined by the needs of the hospitals themselves and in conformity with the regulations set forth by the House of Delegates in the Essentials of a Registered Hospital reading as follows: "Staff meetings should be held for the review of the work of the hospital, the discussion of results, the report of autopsies, pathologic studies, presentation of papers and such other matters as concern the professional work of the hospital."

A resolution was adopted reaffirming its long established opposition to extending the benefits under the Veterans Administration to encompass those disabilities obviously not service connected.

The Reference Committee recognized the problems referred to by Dr. Kretschmer concerning the availability of x-ray studies. The American College of Radiology has promulgated principles for the guidance of all radiologists recommending that, when a patient changes the attending physician, the radiologist should freely transmit the result of his examination to the second doctor. Great harm would be done and disservice to the patient would result, if, in practice, patients were given the possession of x-ray films which are the legal property of the radiologist or institution in which they were produced. In actual experience, patients who obtain possession of such clinical records too often take them to an irregular practitioner who is unqualified to interpret them or who may use them to the patient's own injury by reading into them nonexistent pathologic conditions. Any competent physician is entitled to inspect x-ray films used in examination of his patient regardless of who ordered them. It should be emphasized that the roentgenologist considers it ethically obligatory to furnish reports and, as requested, to lend films to the physician currently treating any patient. This portion of the report was adopted.

Council on Medical Education again called attention to its studies on the status of medical students with recommendations that the House of Delegates request state and county medical societies to admit students as members. This recommendation was approved.

The reference committee recommended that the proper By-Law for two meetings a year of the House of Delegates be prepared for introduction and consideration by the House at its next meeting, July 1946. The Speaker announced, however, that there could be two meetings without amendment of the By-Laws if the House so wishes.

The election of officers resulted as follows: Dr. H. H. Shoulders, President-elect; Dr. W. R. Moloney, California, Vice-President; Dr. Olin West, Secretary to succeed himself; Dr. J. J. Moore, Chicago, Treasurer; Dr. R. W. Fouts, Omaha, Speaker of House; Dr. F. F. Borzell, Philadelphia, Vice-Speaker; Dr. John H. Fitzgibbon, Portland, Oregon, Trustee to succeed Dr. Ralph A. Fenton; Dr. James R. Miller, Hartford, Conn., Trustee to succeed Dr. James R. Bloss; Dr. Dwight H. Murray, California, Trustee to complete the unexpired term of Dr. Edward M. Pallette, deceased.

An invitation to meet in St. Louis in 1948 was received. This was the only invitation received for 1948, and it was accepted at once.

The Speaker named a committee on the Centennial Celebration, to cooperate with the Board of Trustees.

The House adjourned, to meet on July 1, 1946, in San Francisco.

The House of Delegates convened in San Francisco, July 1, 1946, with a quorum present. The Speaker, Dr. R. W. Fouts, Omaha, appointed your delegate as one of the tellers. Dr. A. J. Carlson, Chicago received the Distinguished Service Award.

Dr. Roger I. Lee, Boston, President, stated that the Association supported the principles involved in the Hill-Burton bill, but if the effect depends not on need but on political pressure, then the medical profession has exchanged part of its birth right for a mess of pottage. The Association has also teamed up with other scientific organizations in favoring the foundation of the National Scientific Foundation, but the administration may be of a different order. He cited these two illustrations because the intent is benevolent, but dangers lurk in them for the profession just as in the more obvious attempts at government interference, as in the Wagner-Murray-Dingel bill. The fate of all three of these measures is still with Congress. It seems likely, however, that the first two will pass in some form, and altho it is believed that the Wagner-Murray-Dingel bill has no chance in this legislature, Dr. Lee urged watchfulness and deplored overconfidence, and suggested that, as the younger men of the profession will be most concerned, they be given a larger share in the affairs of the Association and its constituent organizations.

The President-elect, Dr. H. H. Shoulders, Nashville, spoke of reconstruction after the First World War, and stated that the bills passed at that time have been very limited as far as the veterans are concerned, that this Association is interested in preventing the setting up of government agencies between the patient and his doctor, and that veterans have the same objectives.

This was followed by the report of the Secretary, Dr. George F. Lull, Chicago, who succeeded Dr. Olin T. West. Dr. R. L. Sensenich, chairman of the Board of Trustees, presented their report. Later Dr. Sensenich presented a supplementary report of the Board of Trustees on a proposed amendment to the By-Laws providing that the House of Delegates shall meet in supplementary session once during the interval between annual sessions at a time and place designated by the Board of Trustees.

It was reported that the voluntary prepayment medical care plan program is showing great progress. At this time 31 states have plans set up and 12 states and the District of Columbia are in process of developing plans. This leaves but 5 states in the minus column. The "Standards of Approval," set forth by the Council and approved by the Board of Trustees for prepayment plans, specifically state that the prepayment plans must have the approval of the state medical association and county medical societies in whose areas it operates. The Council staff is cooperating with the Bureau of Medical Economics to complete an outline of supporting evidence for voluntary sickness insurance as opposed to compulsory sickness insurance.

The Committee on Rural Medical Service suggested that medical schools place more emphasis on general practice as a career, in view of the need for more well-trained practitioners in the rural areas. Also, practice in small clinical groups was suggested as one way in which practice in rural communities could be made attractive.

The Reference Committee on Reapportionment for the next three years recommended there be one delegate for each 1000 members or a fraction thereof, and each constituent association be represented by one delegate irrespective of the number of members. On this basis the total membership of the House of Delegates will again be 175.

Resolutions were presented recommending that a committee be appointed to inquire into the failure of the Surgeon-General of the United States Army to receive the rank given the comparable office in the Navy and other branches of the Army service, and into the general situation of military rank accorded doctors of medicine during World War II. Major General Norman T. Kirk, Surgeon-General, U. S. Army, addressed the House briefly.

Tribute was made to Dr. Olin West, retiring Secretary, at the same time expressing appreciation for the evident sincerity of his successor, Dr. George F. Lull.

Also recommended was the suggestion of submitting resolutions 30 days in advance of the meetings of the House of Delegates.

Dr. Ross T. McIntire, Vice-Admiral. Surgeon-General of the U. S. Navy, addressed the House.

At the last session of the House the Board of Trustees announced that they had employed a firm of public relations experts to offer recommendations for the future conduct of the Association's public relations (in order to combat the view that the Association has become primarily concerned with the economic interest of the doctor) by presenting the manifold activities of the American Medical Association in various fields of medical science. The consultants recommend that the Association seek every opportunity and means to describe and dramatize to the public the progress of scientific medicine, that this work be entrusted to the editor of the J. A. M. A., with specific reference to Hygeia, and widespread outside contributions. They also recommend that the Bureau of Medical Economics be expanded and that a person of high caliber be obtained for promotion of the Bureau, and that he be ressponsible for procuring and developing the material for a department of medical economics in J. A. M. A. and Hygeia. That most important finding deals with the overall interpretation of the Association to the general public, and recommends that the General Manager be authorized to secure an Executive Assistant in charge of coordinating and servicing the activities of all officers, councils, bureaus, divisions, and departments of the Association in relation to the profession and general public, with the responsibility of developing ways and means of broadening the system of interpretation of the Association, to the public, including matters other than scientific medicine. All these items are under consideration, many of them under way.

With reference to the establishment of a lobby in Washington, the House of Delegates went on record as opposing such an establishment and the Board of Trustees concurred. They have, however, established a Bureau of Information, which has proved very useful and effective.

The House reconvened at 1:15 p. m., July 4th. Dr. Mundt, chairman, reported 173 delegates seated.

The Speaker of the House was authorized to appoint a committee to consider the revision and rewriting of the Constitution and By-Laws of the A. M. A., and the committee was directed to report at the next session of the House.

Sir Stewart Duke-Elder of London was nominated by the Section on Ophthalmology for honorary fellowship in the American Medical Association.

The election of officers resulted as follows: Dr. Olin West, Nashville, President-elect; Dr. E. L. Bortz. Philadelphia, Vice-President; Dr. George F. Lull, Chicago, Secretary; Dr. J. J. Moore, Chicago, Treasurer; Dr. R. W. Fouts, Omaha, Speaker of the House; Dr. F. F. Borzell, Philadelphia, Vice-Speaker of the House; Dr. Charles W. Roberts, Atlanta, member of the Board of Trustees; Dr. W. F. Donaldson, Pittsburgh, member of the Judicial Council; Dr. L. W. Larson, Bismarck, member of the Council on Scientific Assembly; Dr. Victor Johnson, Chicago, as a member of the Council on Medical Education and Hospitals; and for Dr. E. J. McCormick, Toledo, and Dr. Thomas A. McGoldrick, New York, as members of the Council on Medical Service.

New York was chosen as the meeting place for the 1949 annual session. The Board selected the week of June 9-13 for the Atlantic City Session in 1947 and the week of May 10-14 for the St. Louis Session in 1948. It was necessary to give a definite date for St. Louis at this time in order to get a desirable time to avoid the heat and unfavorable situation in St. Louis in late summer.

Dr. Olin West, President-elect, then addressed the House, following which Dr. John W. Cline, California, stated that the House of Delegates, the officers of the Association, the members of the Board of Trustees, and the numerous friends of Dr. Olin West, in recognition of long and faithful service to the A. M. A., wished to present to him and Mrs. West, as a memento of this occasion, the silver service set on display. Dr. West acknowledged the gift with expressions of deep appreciation.

House then adjourned, to meet at Atlantic City, June 9-13, 1947.

PRESIDENT DEAKYNE: A motion has been made and seconded that the reports of Dr. Beebe, Delegate to the American Medical Association, be accepted. All those in favor of the motion say, "Aye." Opposed? The report is accepted.

Dr. LaMotte?

SECRETARY MUNSON: I have no report from Dr. LaMotte.

President Deakyne: The Committee on Nominations, Chairman Bird.

Dr. Bird: Dr. Smith will make the report.

. . . Dr. Smith then read the report of the Committee on Nominations as follows:

Report of the Committee on Nominations

Your Committee offers the following nominations:

First Vice-President, Howard S. Riggin, Seaford; Second Vice-President, H. V. P. Wilson, Dover; Secretary, C. Leith Munson, Wilmington; Treasurer, A. L. Heck, Wilmington; Councilor, E. L. Stambaugh, Lewes (1949); Delegate to the A. M. A. (1947) James Beebe, Lewes; Alternate (1947) C. C. Neese.

Standing Committees: Scientific Work, H. W. Smith, Harrington; C. M. Moyer, Laurel; C. L. Munson, Wilmington; Public Policy and Legislation, J. D. Niles, Townsend; Wm. Marshall Jr., Milford; Bruce Barnes, Seaford; Publication, W. E. Bird, Wilmington; M. A. Tarumianz, Farnhurst; C. L. Munson, Wilmington; Medical Education, O. A. James, Milford; R. S. Long, Frankford; S. W. Rennie, Wilmington; Necrology, U. W. Hocker, Lewes; O. V. James, Milford; G. W. K. Forrest, Wilmington; Board of Medical Examiners, J. S. McDaniel, Dover; P. R. Smith, Wilmington; W. T. Chipman, Harrington; Wm. Marshall Jr., Milford; W. E. Bird, Wilmington; I. J. MacCollum, Wyoming; L. J. Jones, Wilmington; H. V. P. Wilson, Dover; James Marvel, Laurel; B. M. Allen, Wilmington.

Respectfully submitted,
Hewitt W. Smith, *Vice-Chairman*

Dr. Tarumianz: Mr. President, was there any particular reason why the Treasurer was changed?

Dr. Lattomus: Mr. President, it was my suggestion. When Dr. Heck left for the Navy he was Treasurer, and I was appointed to finish his term, and I thought it was only a courtesy that we should offer the treasureship to him again.

President Deakyne: Will some one move that the nominations be closed?

Dr. Niles: I so move.

Dr. Prickett: I second the motion.

President Deakyne: All those in favor of the motion say, "Aye." Opposed? The motion is carried.

Dr. Barnes: For the Nominating Committee, I might say that if Dr. Heck doesn't wish to accept the nomination, Dr. Lattomus is the nominee of the committee.

President Deakyne: There was a motion that the Secretary cast the ballot.

Dr. Beebe: It was seconded.

President Deakyne: Will the Secretary cast the ballot on the Nominating Committee's recommendations.

. . . Thereupon the Secretary cast the ballot . . .

V. A. Fee Schedule

Secretary Munson: There are two items of new business that we will go into very rapidly. The first one is that the Veterans Administration has asked us to submit to them a fee schedule that may be approved in the handling of veterans' cases in our private offices and private institutions.

They have submitted to me a large questionnaire into which we are to put the fees that we would like to charge them. These will have to be okayed by the Veterans Administration and would be applied later on, I believe, to other similar organizations in giving service to the veterans.

Many states have adopted fee schedules which are acceptable to the V.A. I think, as far as Delaware is concerned, the fee schedule which has been set up by the Delaware Rehabilitation Commission and which all of you are or should be familiar with, should be acceptable to the V.A. I would like to suggest that the House ratify the fee schedule set up by the Rehabilitation Commission and apply it to the Veterans Administration.

Dr. Tarumianz: I so move.

Dr. Forrest: I second the motion.

President Deakyne: A motion has been made and seconded that we accept the fee schedule set up by the Delaware Rehabilitation Commission and apply it to the Veterans Administration. All those in favor of the motion say, "Aye." Opposed? The motion is carried.

Medical Broadcasts

Secretary Munson: The second matter is very brief also. I would like permission of the Society to cooperate with Maryland, New Jersey, and Pennsylvania in the preparation and broadcasting of special medical broadcasts. We have done that on our own hook, as it were, for the past few months. They have sent out a rather comprehensive schedule of broadcasts and would like us to okay it and collaborate with these other three states.

Dr. Tarumianz: I so move.

Dr. Bird: Are these broadcasts scientific or propaganda?

Secretary Munson: They are supposed to be scientific propaganda.

Dr. Forrest: I second the motion.

President Deakyne: It has been moved and seconded that we collaborate with Maryland, Pennsylvania, and New Jersey in radio broadcasts of scientific programs. All in favor of the motion say, "Aye." Opposed? The motion is carried.

Secretary Munson: We have been asked to ratify, or vote down, the following resolution prepared from the proceedings of the House of Delegates of the 93rd Annual Session, held at Atlantic City, June 8-12, 1942.

"Whereas, A major inadequacy in the civilian health protection in war as in peace-time continues from the failure of many states and of not less than half the counties in the states to provide even minimum necessary sanitary and other preventive services for health, by full-time professionally trained medical and auxiliary personnel on a merit system basis supported by adequate tax funds from local and state, and where necessary, from federal sources; therefore be it

"Resolved, That the Trustees of the American Medical Association be urged to use all appropriate resources and influences of the Association to the end that, at the earliest possible date, complete coverage of the nation's area and population by local, county, district, or regional full-time modern health services be achieved."

The reason for that is that it is the substitute for the Federal bills in process of preparation to handle socialized medicine.

President Deakyne: You have heard the reading of the resolution by Dr. Munson. All those in favor of ratifying the resolution say, "Aye." Opposed? The resolution is adopted.

Secretary Munson: That is all I have.

Dr. Beebe: I move we adjourn.

Dr. Tarumianz: I second the motion.

. . . Thereupon the meeting of the House of Delegates adjourned at 12:00 o'clock midnight . . .

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*

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+ Editorial +

DELAWARE STATE MEDICAL JOURNAL

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Farnhurst, Del.

Vol. 18 December, 1946 No. 12

House of Delegates

A special meeting of the House of Delegates of the Medical Society of Delaware was held at the Hotel Richardson, Dover, on December 27, 1946, President Walter C. Deakyne presiding. A quorum of the House being present, discussion of a Premarital Bill was held, following which a bill was written that will be presented to the Legislature in January, 1947. It was generally agreed that, as a case-finding bill for the detection of syphilis or the protection of the public health, no Premarital Bill yet enacted in any state amounts to much (see Transactions of the House of Delegates, this issue of The Journal). The bill to be presented to the Legislature was approved because there seems to be a public clamor in some quarters for such a bill, and it was felt that the Medical Society should sponsor a bill that would satisfy the public demand, protect the profession against undue restrictions, and impose a minimum of extra work on the State Board of Health.

Chicago Conference

The Annual Conference of State Secretaries and Editors was held December 7 and 8, 1946, at the American Medical Association Building, Chicago.

The program was as follows:

Saturday, December 7—10:00 A. M.

Call to Order. R. L. Sensenich, Chairman of the Board of Trustees of the American Medical Association.

Election of Chairman. (Julian P. Price, Secretary; Editor, South Carolina.)

The American Medical Association. George F. Lull, Secretary and General Manager of the American Medical Association.

State Medical Society Participation in Network Broadcasting. W. W. Bauer, Director of the Bureau of Health Education of the American Medical Association.

The State Medical Society and the State Government. Creighton Barker, Secretary of the Connecticut State Medical Society.

The Responsibility of the Individual Physician. James C. Sargent, Milwaukee, Wisconsin.

12:00 M. Luncheon.

Saturday, December 7—2:00 P. M.

State Medical Associations and Social Security and Federal Income Taxes. Thomas V. McDavitt, American Medical Association.

The County Medical Society. Mr. M. L. Meadors, Director of Public Relations of the South Carolina Medical Association.

The Cooperative Medical Advertising Bureau. Stanley B. Weld, Editor in Chief of the Connecticut State Medical Journal.

The Medical Profession and Public Relations. Charles Swart, Executive Assistant, American Medical Association.

Saturday, December 7—6:30 P. M.

Dinner For Members of the Conference
Palmer House, Crystal Room

Address: Hon. A. L. Miller, M. C., Fourth District, Nebraska.

(Following the dinner, those present will divide into two groups).

Session for Secretaries—8:00 P. M.

Presiding: Douglas L. Cannon, Secretary of the Medical Association of the State of Alabama.

Commercial Exhibits. L. Fernald Foster, Secretary of the Michigan State Medical Society.

The Home Office of a State Medical Association. R. H. Graham, Executive Secretary of the Oklahoma State Medical Association.

Session For Editors—8:00 P. M.

Presiding: Robert N. Nye, Managing Editor of the New England Journal of Medicine.

The Medical Editor Consults His Readers. Theodore Wiprud, Managing Editor of the Medical Annals of the District of Columbia.

Our Concept of the Function of a State Medical Journal. Jonathan Forman, Editor of the Ohio State Medical Journal.

Sunday, December 8—9:30 A. M.

Introduction of Governor Green. Robert S. Berghoff, President of the Illinois State Medical Society.

Address: Hon. Dwight H. Green, Governor of Illinois.

Reports from Sessions for Secretaries and Editors. Douglas L. Cannon and Robert N. Nye.

Open Forum

Presiding: Julian P. Price, Secretary-Editor of the South Carolina Medical Association.

This Conference was one of the very best yet held. The papers and discussions will be published in the *J. A. M. A.*, Organization Section, and will provide profitable reading.

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BOOK REVIEWS

New National Formulary VIII

The Council of the American Pharmaceutical Association announces that the new, completely revised and enlarged National Formulary will be generally available on and after December 15, 1946. This edition, the eighth published by the American Pharmaceutical Association since 1888, provides official specifications for many widely used drugs not previously included in either the U. S. Pharmacopoeia or the National Formulary. Copies of the new edition may be obtained from the Mack Publishing Company, 20th and Northampton Streets, Easton, Pennsylvania, at $7.50 per copy.

Among 188 new admissions to the revised N. F. VIII are such drugs and preparations as Acetarsone, Alcohol Rubbing Compound, Aminoacetic Acid Elixir, Calcium Levulinate, Colloidal Silver Iodide, Ephedrine Sulfate and Phenobarbital Capsules, Ferrous Sulfate Syrup, Isopropyl Alcohol Rubbing Compound, Gentian Violet Jelly, Pentobarbital Elixir, Propylene Glycol, Sippy Powders, Stibophen, and a sun protective ointment.

In addition, formulas and standards are continued in the new National Formulary for many U. S. P. XII drugs not admitted to U. S. P. XIII of which Antipyrine, Bismuth Subnitrate, Camphor Spirit, Ergot and Ergot preparations, Ferrous Carbonate Pills, Reduced Iron; Mercury Bichloride, Nux Vomica, Phenyl Salicylate, and Turpentine Oil are a few examples.

The arrangement of monographs in the National Formulary differs from that of previous editions in that Latin titles, although continued, are preceded by English titles. Monographs are arranged in alphabetic sequence, but in a different order than heretofore. For example, Terpin Hydrate is followed by Terpin Hydrate and Codeine Elixir, and Terpin Hydrate Elixir, and Acetarsone Tablets follow Acetarsone in the new arrangement.

To facilitate the use of the new arrangement, a marginal index is included throughout the book. This is only one of several innovations in the new National Formulary.

The Eighth Edition of the National Formulary represents the culmination of four years of planning and work by the members of the Committee on National Formulary, the staff of the American Pharmaceutical Association Laboratory, and hundreds of collaborators connected with college, governmental, institutional and industrial laboratories.

The actual revision work has been carried on in the Laboratory and offices of the American Pharmaceutical Association, Washington, D. C.

The needs of the practicing pharmacists as well as the use of the book as a legal standard have been kept in mind constantly in the preparation of the new Eighth Edition of the National Formulary, since this book is one of the official compendia recognized as a source of drug standards in Federal and State food and drug laws.

The National Formulary is now on a continuous revision basis, so that the publication of the N. F. VIII is incidental to the continuous research and development of effective standards for drugs based upon demonstrated therapeutic value or extensive use. As new standards or formulas are devised they will be made known through interim revision or supplements to the N. F., obtainable from the American Pharmaceutical Association office.

The new N. F. VIII becomes official April 1, 1947, and it will be necessary for practicing pharmacists and others to have the book on hand prior to that date to meet the requirements of the various State pharmacy and food and drug acts.

Because of the general industrial situation with respect to printing, paper supplies and binding materials, the first printing has been limited to some extent. It is therefore urged that pharmacists avoid any delay in securing their copies of the N. F. VIII by ordering immediately.

The health officer should look upon tuberculosis as a communicable disease that calls for his best efforts to assist the physician in obtaining adequate treatment for the patient and the maximum protection for the public. His responsibility is the same whether the case reported is tuberculosis, diphtheria, or smallpox.—Henry D. Chadwick, M. D., and Alton S. Pope, M. D., The Modern Attack on Tuberculosis.

MISCELLANEOUS

re Diphtheria

The increased incidence of diphtheria since July 1, 1946, with two deaths, indicates that the immunization of young children should be greatly increased. The State Board of Health has been unable to reach all those needing immunization and it is requested that all physicians notify parents or guardians of non-immunized children, from six months of age, to bring them to their office for immunization against diphtheria, or failing that, to go to one of the State Board of Health Infant and Child Welfare clinics for same. The schedules for these may be obtained from any county health unit. Free diphtheria toxoid is available to any physician upon request.

We thank you for your cooperation and assure you of ours in this important matter.

STATE BOARD OF HEALTH,
Dover, Delaware.

Error in Medical Slyd-Rul

Due to manufacturers' error in placement of decimal point in the Medical Slyd-Rul enclosed in December issue of Ciba Symposia conversion from 0.4 grain to gram is incorrect. It should read 0.025 gram, not 0.25. Please make correction by replacing present celluloid table with corrected temporary paper table now being mailed to you.

Ciba regrets this error which causes you inconvenience, and will replace the temporary slide with a new celluloid table as soon as possible.

1947 Essay Contest

The Seventh Annual Essay Contest of the Mississippi Valley Medical Society will be held in 1947. The Society will offer a cash prize of $100.00, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association who are residents of the United States. The winner will be invited to present his contribution before the Twelfth Annual Meeting of the Mississippi Valley Medical Society to be held at Burlington, Iowa, October 1, 2, 3, 1947, the Society reserving the exclusive right to first publish the essay in its official publication—The Mississippi Valley Medical Journal (incorporating the Radiologic Review). All contributions shall be typewritten in English in manuscript form, submitted in five copies, not to exceed 5000 words, and must be received not later than May 1, 1947. The winning essays in the 1946 contest appear in the January, 1947, issue of The Mississippi Valley Medical Journal (Quincy, Illinois.)

Further details may be secured from Harold Swanberg, M. D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Illinois.

National Conference on Medical Service

The 20th Annual Meeting of the National Conference on Medical Service will be held at the Palmer House, Chicago, Illinois, on February 9. Registration will commence at 9:00 A. M. and the program will include discussions in the fields of national affairs, economics and medical education. All physicians are invited to attend, there is no registration fee. Dr. Cleon A. Nafe, Indianapolis, is President of the Conference, and Dr. Creighton Barker, New Haven, is the Secretary.

American Board of Obstetrics and Gynecology

The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on Friday, February 7, 1947.

Arrangements will be made so far as is possible for candidates to take the Part I examination (written on paper and submission of case records) at places convenient for them. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination to be held June 1-7, 1947, at Pittsburgh, Pennsylvania. Notice of the exact time and place of the Part I and Part II examinations will be sent all candidates well in advance of the examination date.

For further information and application blanks address Paul Titus, M. D., Secretary, 1015 Highland Building, Pittsburgh, Pennsylvania.

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RESOLUTION FOR 1947

I firmly resolve that in 1947 I shall . . .

1. **Attend my medical meetings faithfully.**
2. **Support my officers to my utmost.**
3. **Do my bit whenever asked.**

Signed, with due appreciation of what my Medical Organizations mean to me, to my profession, and to my country.

. . . . **M.D.**

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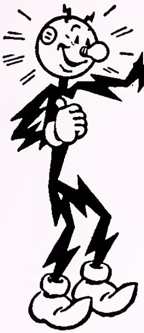

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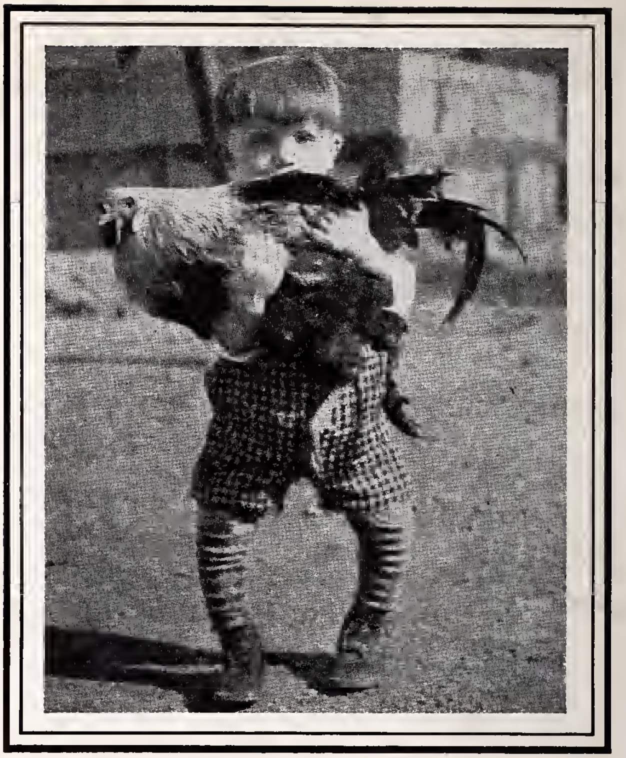

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